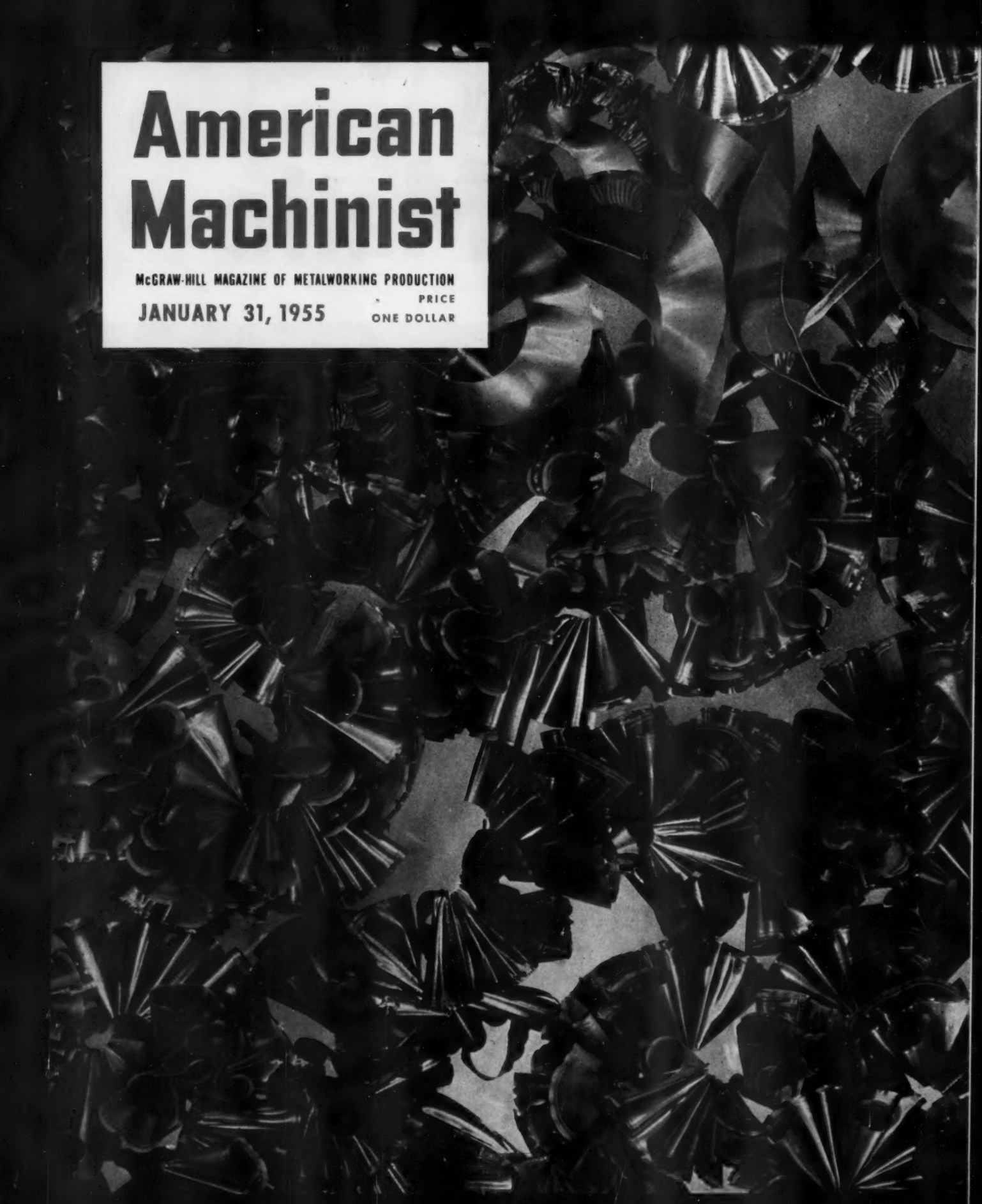
American Machinist

McGRAW-HILL MAGAZINE OF METALWORKING PRODUCTION

JANUARY 31, 1955

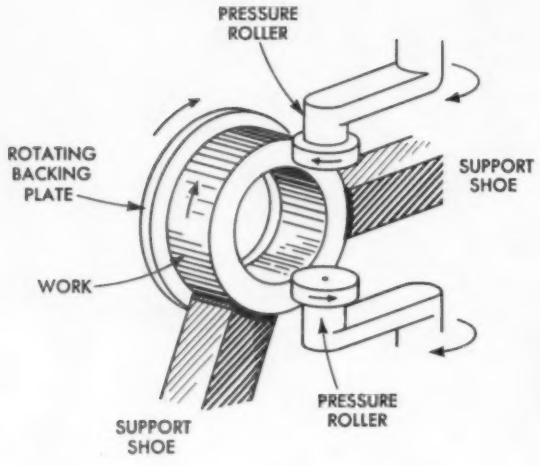
PRICE
ONE DOLLAR

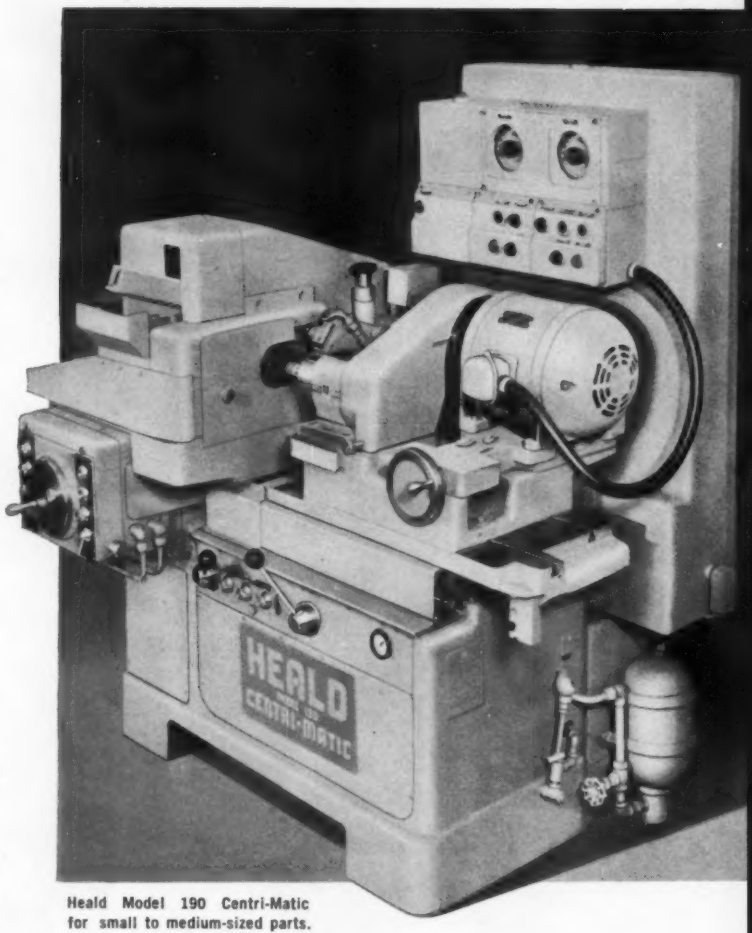


1955 PRODUCTION PREVIEW

MEET THE NEW HEALD

Centri-Matic





Heald Model 190 Centri-Matic for small to medium-sized parts.

Now thoroughly field tested and proved in service, the new Centri-Matic joins the Heald line of fully automatic centerless internals.

Basically, it differs from the roll-type centerless in that the work is located on *fixed support shoes* and is driven by a rotating backing plate against which it is held (see diagram above). The greater contact area of the support shoes tends to bridge any irregularities in the O.D., thus reducing the possibility of reproducing O.D. errors in the ground I.D.

Available in the Model 190 for small or medium-sized work and in the Model 291 for larger parts, the Centri-Matic is ideally suited to conveyor systems and automated work handling devices. Like other Heald internals, it maintains consistent high precision over the longest production runs. Model 190's are designed primarily to operate with central hydraulics in battery setups. Centri-Matic machines are furnished with belt or high-frequency wheelhead drive and with Size-Matic or Gage-Matic sizing method. For complete details, write for Bulletin No. 2-190-1.

The new Centri-Matic is another good reason why IT PAYS TO COME TO HEALD!

THE HEALD MACHINE COMPANY

WORCESTER 6, MASSACHUSETTS

Offices in Chicago • Cleveland • Dayton • Detroit • Indianapolis • New York

HEALD®

American Machinist

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chips

CHIPS . . . The delicate, and difficult-to-photograph, colors of steel chips feature our current cover, which has the same title as this page—although those are actual and these are figurative. Made by McGraw-Hill Studios from a batch of chips sent us by Hardinge Bros, Inc, the photo typifies the emphasis on new machine tools in current Metalworking planning. Builders' latest types are shown in this issue. The cover also reminds you that this is the year of the Machine Tool Show—the first since 1947.

PREMIUM . . . This issue is a natural supplement to our Mid-November Production Planbook, which incorporates three long-lived services, a statistical summary, a classified and cross-referenced review of method and process development of the preceding year, and our biggest Special Report to date, the 128-page roundup on *How to Work Steel.* Many orders for reprints of the latter have already been received from schools because "it is better and more up to date than any textbook available." Our effort was, there as always, to bring you not only what is considered best current practice, but also information not elsewhere available.

BIGGEST . . . This is our greatest annual review of shop equipment. Containing descriptions of more than 2400 new machine tools, parts, and materials, the review is a third bigger than it was last year, which in turn had been the largest review. We have 168 pages of items, plus news departments, so this issue will serve both as your current news report and as a catalog of equipment available during the year 1955. It is the most comprehensive preview of currently new equipment, hence its name—the 1955 Production Preview. You'll want to keep it handy all through the year. It represents the editors' selections from the thousands of items announced during 1954, for these are shortened versions of longer descriptions published in regular issues last year. *No item appears here that has not been published previously in American Machinist.*

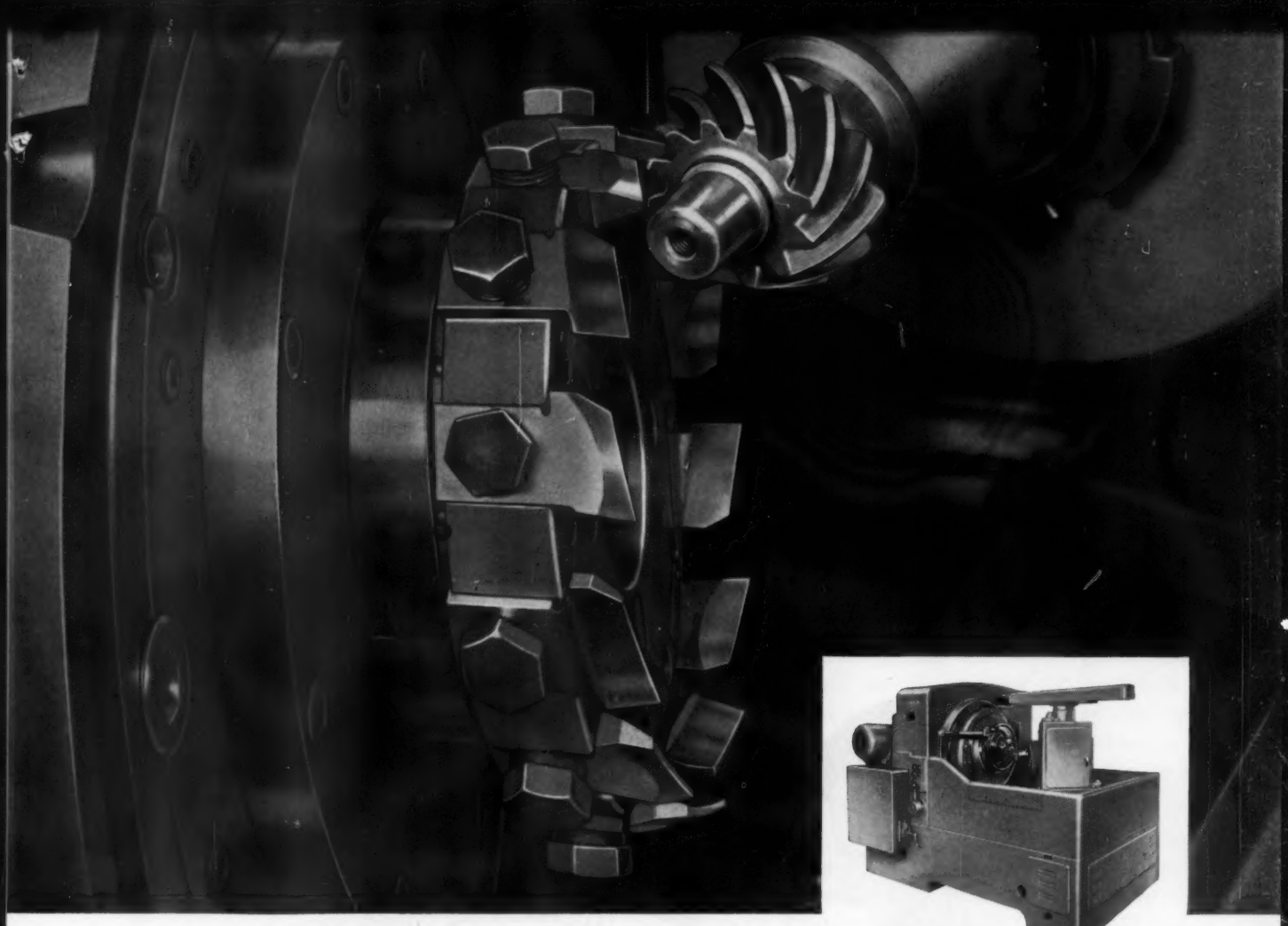
COMING . . . Feb 14 *A M* will include a Special Report on apprentice training, a second one on skiving tools, other stories on making small hydraulic pistons, welding a compressor rotor, a refrigerator-evaporator production setup, the latest on plastic protection for tools, and an assembly system that is unique enough also to deserve a cover picture.

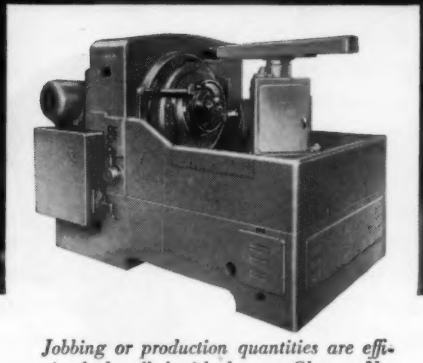
TELL US . . . In addition to suggestions made by readers replying to our regular surveys, we are delighted to hear at any time of article subjects you think suitable, potential articles, or ideas. And your suggestions and/or criticisms are always appreciated.

SCOOP . . . As editors, we find ourselves caught between the legendary Scylla and Charybdis. We'd like to tell you about what we're hoping to publish in coming issues, but we're deterred by the fear that we'll promise something that will be held up at the last minute—or that we'll find something else that must be published at once. Editors indulge in a little game called "scoring a beat" that makes little sense to readers, but it relieves the tension anyhow . . . and it gets us there "fustest with the mostest," to quote General Forrest.

REACTION . . . Our Dec 20 "Christmas Present"—the Special Report on "How Tools Created Our Civilization," is creating some furore. Several companies have already purchased quantities for distribution to their employees, and schools are using it as a supplementary text. Looks like we'll have to make a second run. It's still available at 25 cents a copy, with a reduction for quantities. Just address your order to our Reader Service Department.

Editing of this issue is a long, tedious and arduous job, which must of necessity fall upon a relatively small number of editors. Most of the planning and editing were done, over the past several months, by Jack Merriam, with the assistance of Ann McTague. It is to them your thanks are due if you find this issue of value.





Jobbing or production quantities are efficiently handled with the new Gleason No. 106 Hypoid Generator.

This new generator cuts medium-size bevel gears *faster than ever!*

Several things have been done to make this new Gleason No. 106 Hypoid Generator the fastest machine for producing medium-size bevel gears.

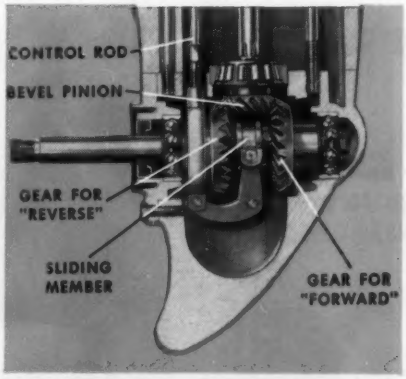
For example, new generating and feed mechanisms coupled with rigid construction give more efficient cutting cycles, speeding up cutting time. In addition, the new generating method assures excellent finish, and maximum cutter life.

Few adjustments required

Since fewer adjustments are necessary, faster setup and change-over are attained.

Extreme operating flexibility is one of the outstanding features of the 106. This permits its use for jobbing, production and completing. When it is arranged for completing, gears are finished directly from the solid blank.

This machine handles gears from 2″ to 8½″ diameter, 4DP and finer, with ratios up to 10/1, cone distances up to 5¼″. We will gladly send you more details on request.



Spiral bevel gears similar to those in this outboard motor drive are cut accurately and quickly on this Gleason machine.

GLEASON WORKS

Builders of bevel gear machinery for over 85 years

1000 UNIVERSITY AVE., ROCHESTER 3, N.Y.

49

In less time than it takes to

You Automatically Balance on Cincinnati Filmatic Plain

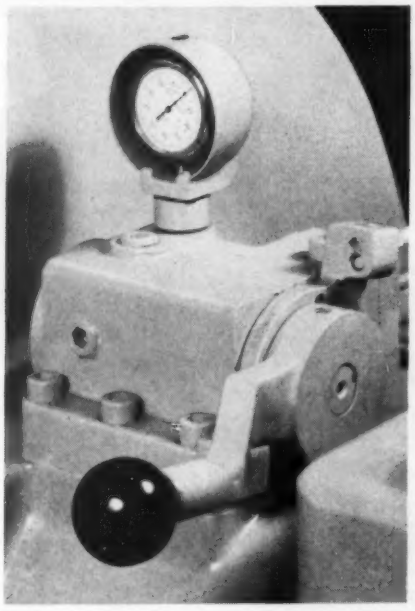
CINCINNATI

Automatic Wheel Balancing is now standard equipment on 6", 10"-L, 10", 14"-L, 14" and 16" Plain Hydraulic Grinders, and on 6", 10"-L, 10" and 14"-L Angular Feed Plunge Grinding Machines.
In the illustration below, the operator shows how easy it is to balance the grinding wheel on a CINCINNATI FILMATIC 10" x 72" Plain Hydraulic Grinder.
CINCINNATI

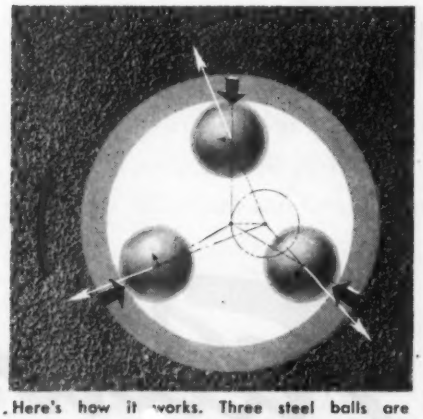
read this headline . . .

the Grinding Wheel and Roll Grinders

FILMATIC



Automatic balancing control lever and indicator.



Here's how it works. Three steel balls are carried in a raceway in the wheel end of the spindle. As the spindle rotates while the elastically supported bearing assembly is unclamped, the balls are free to move and correct any unbalanced condition that may exist. Then the complete spindle and bearing assembly is locked in position to form a rigid mounting, and retain all the advantages of FILMATIC bearings for precision cylindrical grinding.

Have you ever seen an operator balance a grinding wheel mount on conventional static balancing ways? It's a tedious operation. If he's lucky, the wheel will balance within about 15 minutes; if he's not so lucky, it may require an hour or more! Cincinnati did something about this. They developed automatic grinding wheel balancing that does the job ten times more accurately and infinitely quicker and easier.

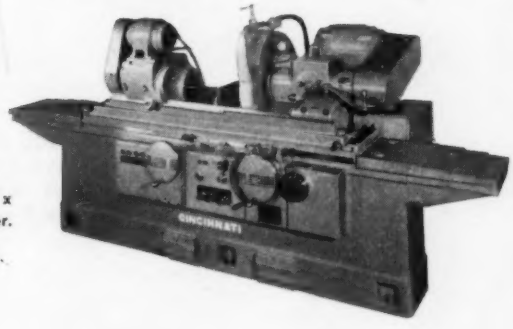
> *This exclusive Cincinnati feature* automatically balances the grinding wheel mount on the machine . . . within a few seconds . . . while the spindle rotates at its operating speed. *This exclusive Cincinnati feature* eliminates vibration and resultant chatter on the work . . . permits more effective stock removal . . . reduces wheel cost per workpiece.

FILMATIC spindle bearings and automatic grinding wheel balancing constitute a team that just can't be beat for lower cost precision cylindrical grinding. Best of all, these features are *standard equipment* on CINCINNATI FILMATIC 6", 10"-L, 10", 14"-L, 14" and 16" Plain Hydraulic Grinders, and on 6", 10"-L, 10" and 14"-L Angular Feed Plunge Grinding Machines. Write today for the complete balancing story. Ask for publication No. G-637-1.

CINCINNATI GRINDERS INCORPORATED
CINCINNATI 9, OHIO

CINCINNATI

CENTERTYPE GRINDING MACHINES • CENTERLESS GRINDING MACHINES
CENTERLESS LAPPING MACHINES • MICRO-CENTRIC GRINDING MACHINES



CINCINNATI FILMATIC 10" x 36" Plain Hydraulic Grinder. Catalog No. G-603.

THE FELLOWS METHOD . . . when

THE PROBLEM:

To cut two 27.750 inch pitch diameter internal gears, with the teeth in line in the large end. The lower internal is located close to the web. Tolerances are close for the nature and size of the piece. The necessity for keeping the percentage of "rejects" at a minimum is obvious.

THE *Fellows*

you can't afford "rejects"

Fellows Cutting Safeguards Valuable Magnesium Casting for Piasecki Helicopter

The Steel Products Engineering Company of Springfield, Ohio cuts the gears in this piece on a Fellows Gear Shaper. Using a 5-inch stroke of the cutter, both gears were cut at the same setting, thereby keeping the teeth in line. Cutting the internal close to the web was no problem because of the ability of the Gear Shaper to cut into a narrow recess. Tolerances were held because of the control of accuracy built into the cutter and the machine. Consequently, "rejects" *were* held to a minimum.

The Fellows Method affords versatility and cost economy. It produces profits by keeping quality up and costs down.

Ask any of our offices for information about the complete line of Fellows Gear Shapers, Shaving Machines and Gear Inspection Instruments.

GEAR SHAPER COMPANY

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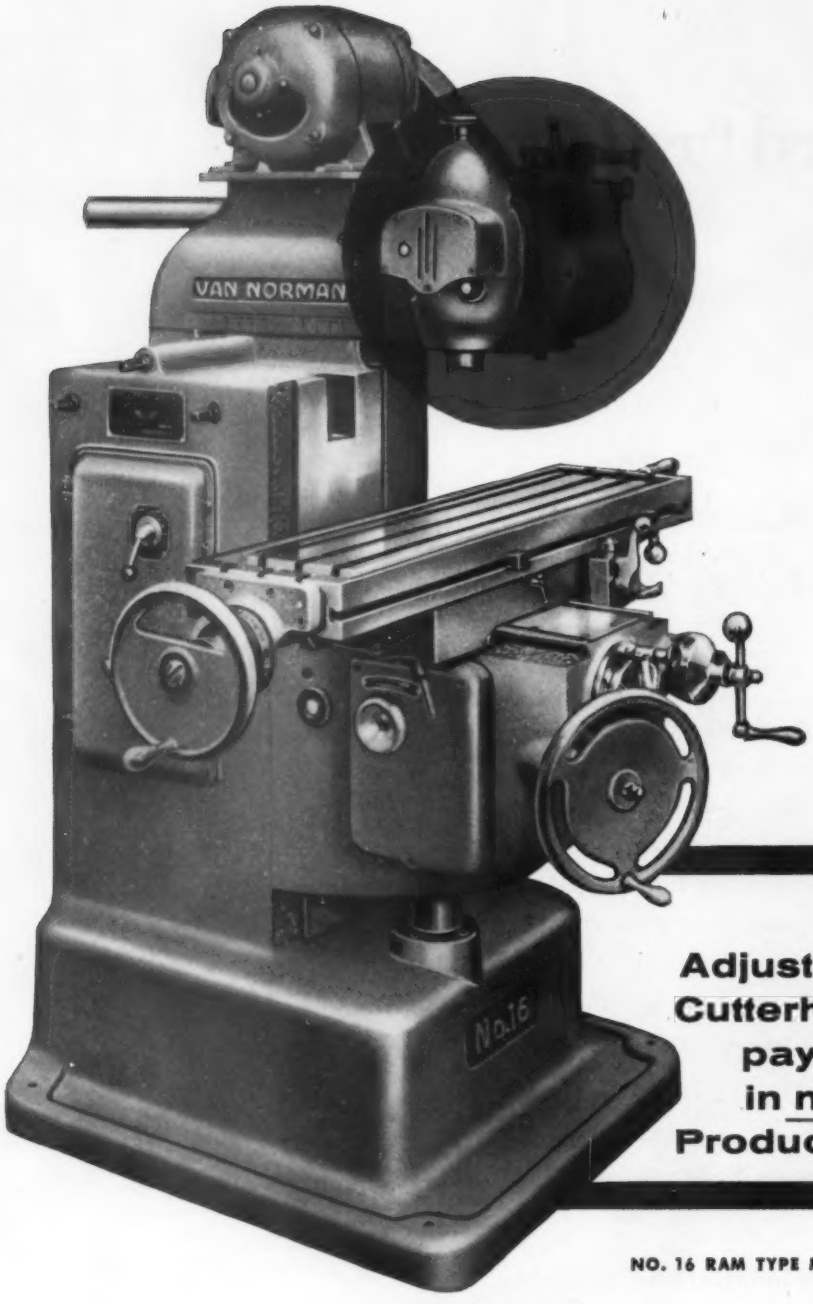
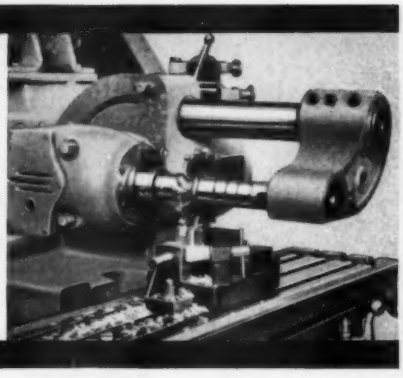


ONE does single

The Adjustable Cutterhead pays off in more Production



NO. 16 RAM TYPE MILLER

HORIZONTAL MILLING

Operator simply swivels the adjustable cutterhead to horizontal position . . . locks it in place . . . and he is ready for horizontal milling. Hardened stop set at factory assures positive 0° setting.

Conventional horizontal and vertical, as well as angular milling all on ONE miller . . . that's what you get with Van Norman Ram Type Milling Machines. The adjustable cutterhead, mounted on a movable ram, enables you to perform all types of milling by simply positioning the cutterhead in the desired position. Not only does this important feature give you the workability of several single machines, but it also minimizes work set-ups . . . cuts idle machine and operator time by permitting you to meet job to job milling requirements as they occur.

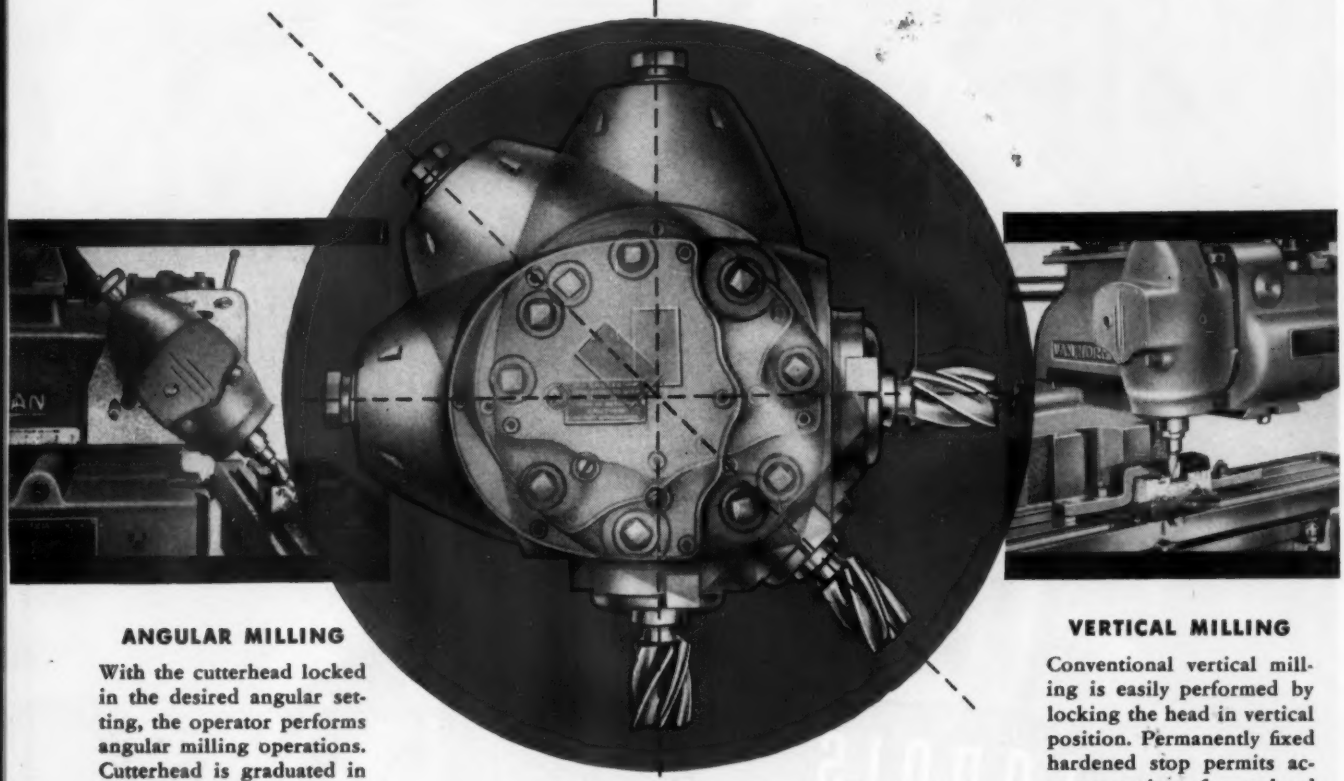
Write for full details today.

VAN NORMAN

MANUFACTURERS OF — Ram and Column Type Milling Machines, Cylindrical Grinders, Spline and Gear Grinders, Oscillating Radius Grinders, Special Production Grinders, Centerless Grinders.

Van Norman Ram Type Miller

the work of THREE purpose machines



ANGULAR MILLING

With the cutterhead locked in the desired angular setting, the operator performs angular milling operations. Cutterhead is graduated in degrees from 0° to 90° for easy positioning.

VERTICAL MILLING

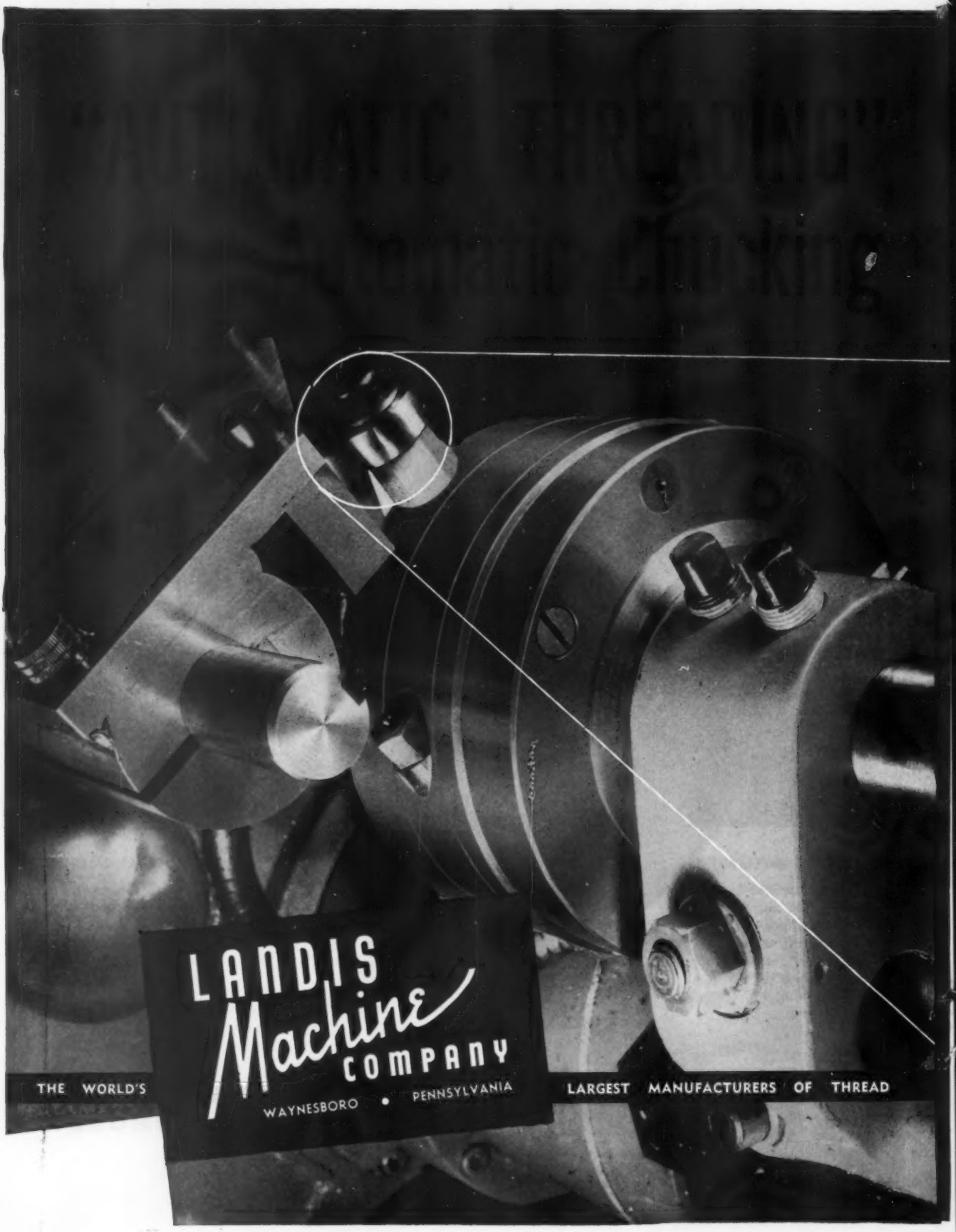
Conventional vertical milling is easily performed by locking the head in vertical position. Permanently fixed hardened stop permits accurate setting of cutterhead at 90°.

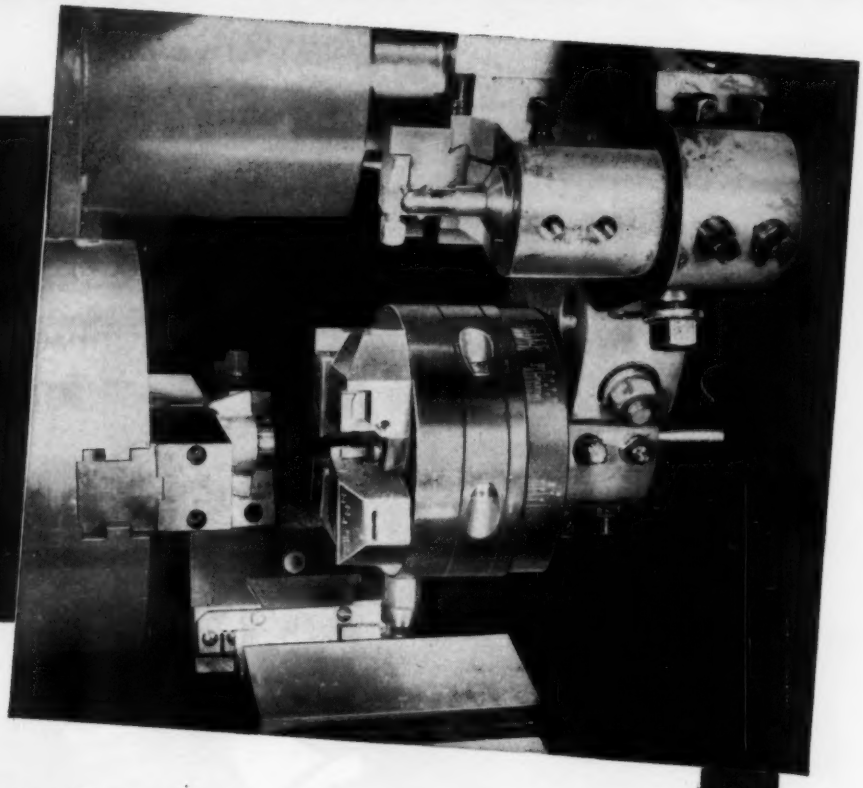
COMPANY

SPRINGFIELD 7, MASSACHUSETTS

Don't wait . . . for extra profits install a Van Norman Machine now! They are available on five purchase plans — Outright sale . . . Purchase on conditional sales contract up to 5 years . . . Pay as you depreciate . . . Straight lease . . . Lease with option to buy. See your dealer or write Van Norman Company.

Lease and Conditional Sales Contracts not available to Export


LANDIS
Machine
COMPANY
WAYNESBORO • PENNSYLVANIA
THE WORLD'S
LARGEST MANUFACTURERS OF THREAD



GENERATING EQUIPMENT

The adaptability of Landis Heads is once again proven by this application of a LANDMATIC Head on a #1AC Warner & Swasey Automatic Chucking Machine. Normally, the LANDMATIC is applied to turret lathes and while self-opening, it is closed manually. To adapt this stationary head for automatic operation on the Automatic Chucking Machine, only two steps were required: (1)—the addition of a closing roller in place of the handle and (2)—the use of special closing pins which provide overtravel, eliminating the need of a complicated, accurately-set closing cam.

This adaptability has paid off for the S&C Electric Company, Chicago, Illinois, manufacturers of high voltage protective equipment.

Besides a completely automatic threading operation, this head, through the use of long life tangential chasers, offers lower tool cost and less down time. For example—when threading the workpiece shown, a contact ferrule of 85-5-5-5 cast red brass requiring a 1⅜"—16 Pitch UN thread ⅜" long into a 1/16" relief, complete runs of over 3000 pieces are made without grinding the chasers.

Another outstanding feature of LANDMATIC Heat-Treated Heads is their wide range coverage and oversize capacity. The 2" Head, illustrated here, will normally thread all diameters ranging from ⅜" to 2". Using oversize chaser holders, its range can be increased to thread up to 3¾" in diameter.

For more complete information on LANDIS Heat-Treated Heads for rotary or stationary applications, straight or tapered threading, ask for Bulletin F-90. Please send specifications when writing.

One Machine for all these grinding jobs

Landis Universal and Tool Grinder

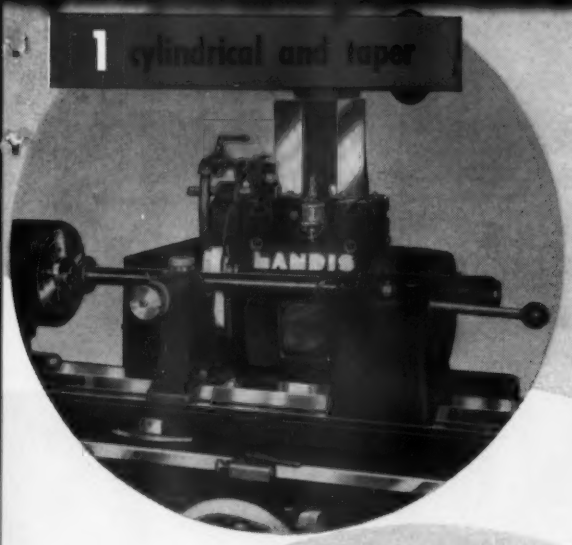
Landis 12" x 28" Universal and Tool Grinder —two machines in one—a tool grinder and a universal grinder. Catalog K - 53

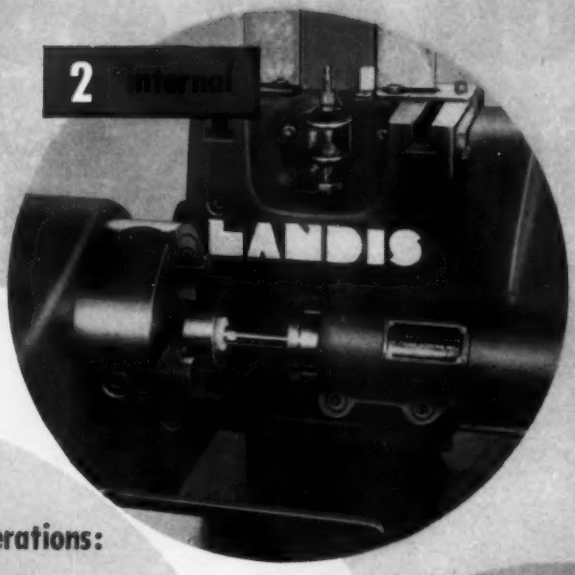
LANDIS

precision grinders

LANDIS TOOL COMPANY / WAYNESBORO, PENNA., U. S. A.

179

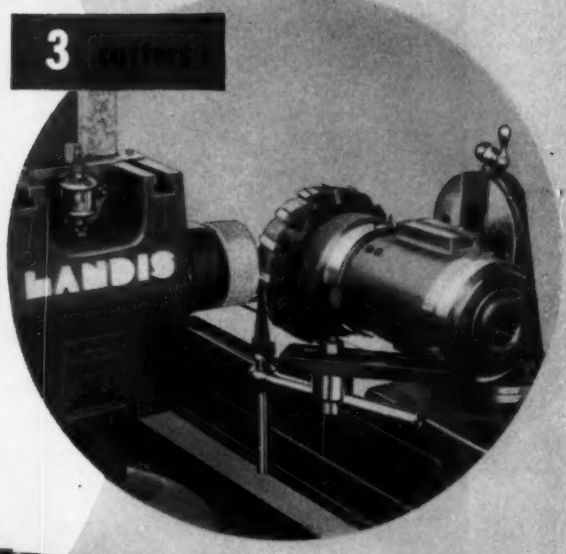


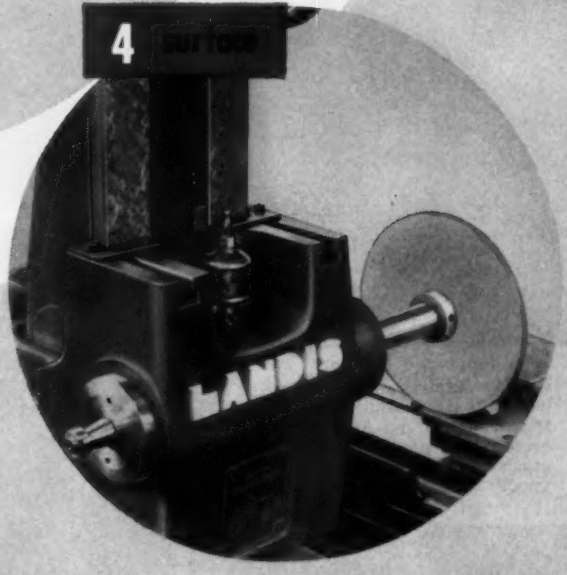


Also Performs These Grinding Operations:

6. Clearance on saws, cutters and reamers
7. Flutes on taps
8. Face of teeth on formed cutters
9. Spiral mill grinding
10. Milling cutters
11. Wet grinding
12. Dry grinding
13. Hobs
14. Parallel blocks, flat forming tools and dies
15. Screw machine and other forming tools
16. Angular wheel face
17. Reamers, taps and form cutters
18. Gear cutters
19. Face mills
20. End mills
21. Drills
22. Saws

(All operations can be done with standard and extra equipment)





You get 45 distinct standard equipment

Here's a highly skilled G&L craftsman making final adjustments in the spindle feed gears. All gears have been flame-hardened and precision ground to insure lasting precision . . . smooth, vibrationless positive power.

spindle speeds as with a G&L 30 Series

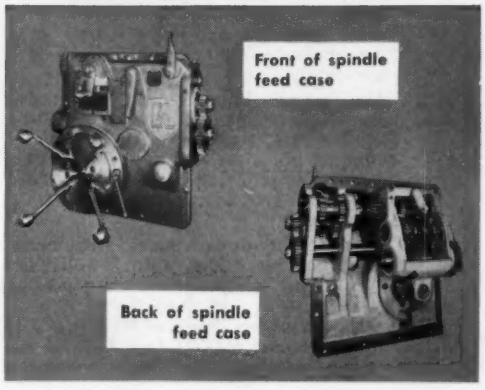
Only a G & L 30 Series table type Horizontal offers so many separate spindle speeds and positive all-geared spindle drive — plus the high torque and full power you need for efficient machining at low or high speeds.

THE engineering of a G&L 30 Series Horizontal Boring, Drilling and Milling Machine's headstock and spindle drive provides a perfectly balanced combination of versatility, efficiency and long-lived precision. With positive all-geared drive — 45 speeds in fine increments — are easy to select or change. Design of the gear train insures high torque at the cutter when working at lower speeds. And — at high speeds — the drive gear shifts and performs with a flywheel effect that provides maximum cutting efficiency of carbide tools. What's more, four gibs on the headstock assure maximum bearing surface, perfect alignment at all times.

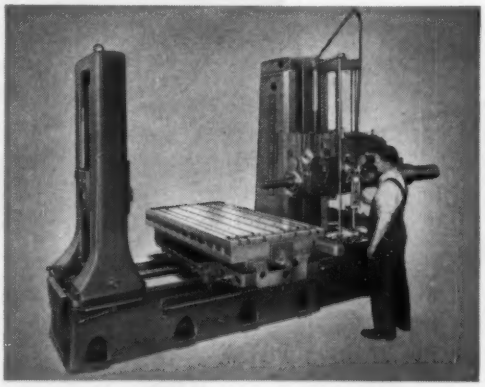
Check these other important advantages

Two of the many other additional advantages you get with a G&L 30 Series are (1) flame hardened and precision-ground bed and saddle ways which are standard equipment and, (2) the option of extended saddle, saddle supports and auxiliary runways which take the risk out of precision machining large workpieces that require the full range of the machine.

Comparing a G&L 30 Series with any other machine in its class — you'll discover that feature for feature, advantage for advantage, you can't buy better. Like all G&L machine tools, the 30 Series has been "often copied, never equaled."



Adjustable micrometer dial graduated in .001" provides fast, accurate spindle positioning. At right, dials beneath cover plate are geared to rotary selectors, show speed or feed engaged. While making selections, operator merely watches window until desired setting appears.



There are two basic models in the 30 Series — the 340-T with 4" spindle and 20 hp, or the 350-T with 5" spindle and 25 hp. Both machines offer a choice of three basic arrangements of table and saddle.

GIDDINGS & LEWIS MACHINE TOOL CO.

FOND DU LAC, WISCONSIN

Builders of the world's finest heavy-duty machine tools — Horizontal Boring, Drilling and Milling Machines — table, floor and planer types; Hypro Double Housing and Openside Planers; Planer Type Milling Machines and Vertical Boring Mills; and Davis Cutting Tools

Efficiency in Cutting-off is Important

Practically all machining operations start with pieces cut-off from bars or billets. Hence, inefficiency, or lack of capacity, in the cut-off department can hold up or stagnate the entire plant.

THE MARVEL NO. 6A AND 9A HEAVY DUTY HACK SAWING MACHINES

A. Are all-ball-bearing and provide a quick return; therefore they run FASTER than others on the same work.

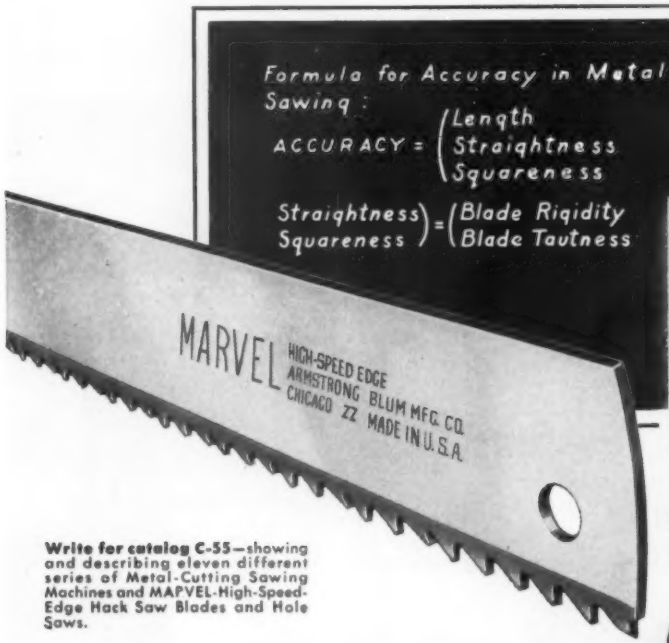
B. Can apply as much as 1200 pounds feed pressure—two to ten times as much as other hack saws and band saws.

C. Are fully automatic, requiring no more operator attention than an automatic screw machine; and set-up for any bar size and cut-off length is extremely simple.

D. Use a non-breakable high speed hack saw blade—the type of saw blade that produces the greatest number of square inches of metal cut per dollar of blade cost—two to ten times (or more) as much as any band saw.

E. Because of their exceptional sturdiness, ball bearing reciprocating frame, ability to tension the blade "truly taut", their accuracy is dependable.

If you are not using modern, improved MARVEL NO. 6A and 9A production hack saws, call the local MARVEL Field Engineer and get his production and cost estimates on your work—to compare with your experience records.


Formula for Accuracy in Metal Sawing:
ACCURACY = (Length, Straightness, Squareness
Straightness, Squareness) = (Blade Rigidity, Blade Tautness
MARVEL
HIGH-SPEED EDGE
ARMSTRONG BLUM MFG. CO.
CHICAGO ZZ MADE IN U.S.A.

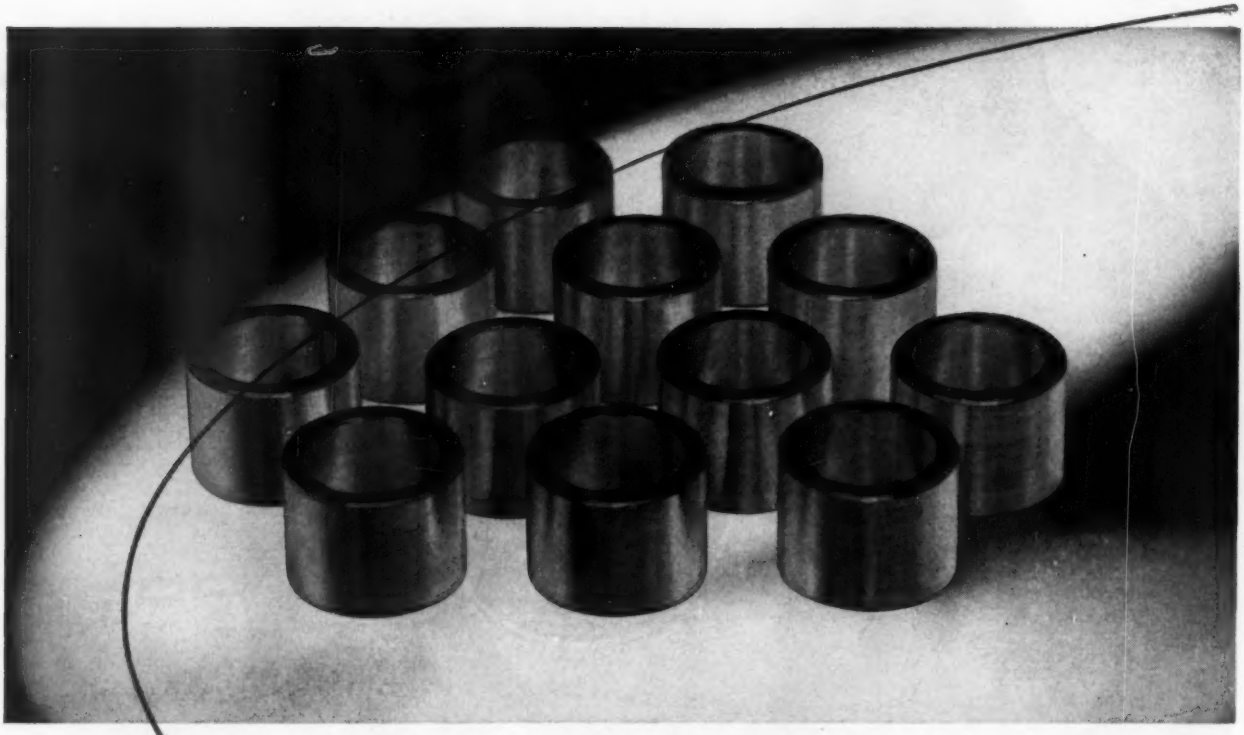
The composite MARVEL High-Speed-Edge Hack Saw Blade—cuts **any** machinable material efficiently. There is no time lost changing blades for different types of steel; no time lost replacing shattered blades, because MARVEL High-Speed-Edge Hack Saw Blades are positively **unbreakable.** These superior blades have the finest high speed steel cutting edge welded to a strong alloy steel body. They will stand-up under the highest speeds and heaviest feeds attainable on any make hack saw. Can be safely tensioned tauter than any other blade—cut-off not only straight but also square and with less stock loss.

Write for catalog C-55—showing and describing eleven different series of Metal-Cutting Sawing Machines and MAPVEL-High-Speed-Edge Hack Saw Blades and Hole Saws.

MARVEL Metal Cutting SAWS
Better Machines-Better Blades

ARMSTRONG-BLUM MFG. CO. 5700 West Bloomingdale Avenue • Chicago 39, U.S.A.

No. 9 in a Series



these requirements in mind...

So varied are the demands on multiple spindle automatics it is impossible to design into one model — or a number of models — all the facilities that will satisfy every requirement. To excel in any range of work the design of a machine of this type must be directed toward that work.

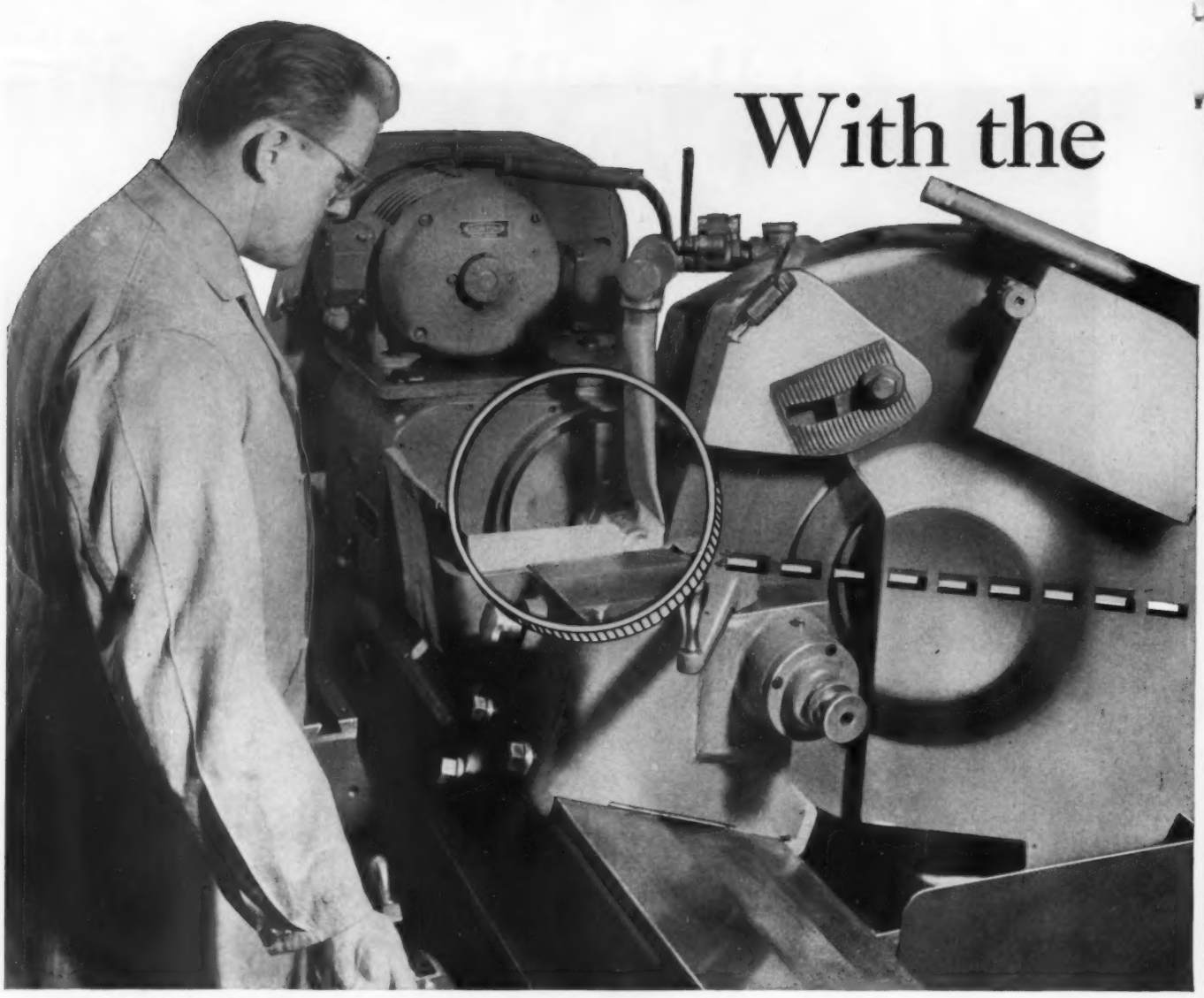
Cone's new General Datalog lists over forty CONOMATIC models that are designed with these requirements in mind. For any range of work, Conomatics are built to more efficiently serve the latest cutting tool materials.

data for comparison

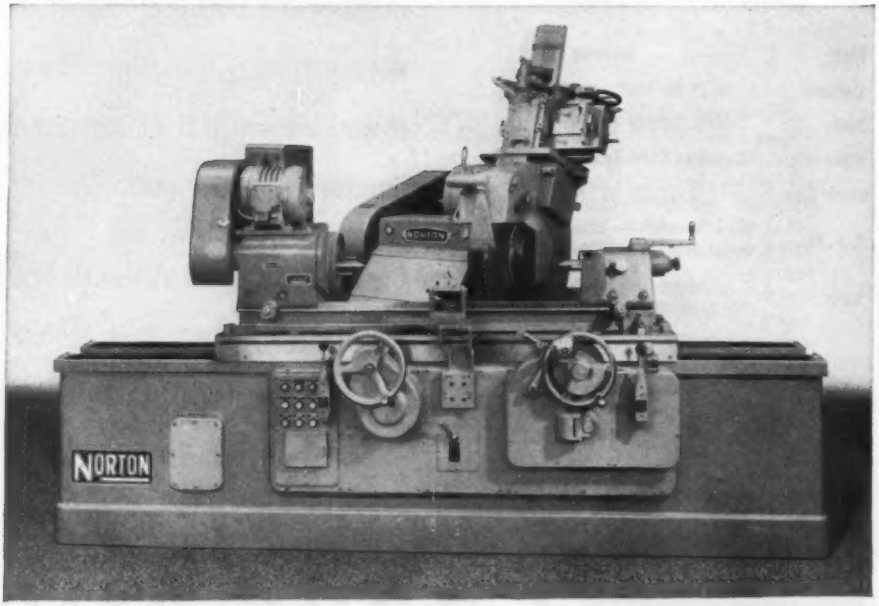
Part	Bushing
Machine	1⅛" Six Conomatic
Tools	100% Carbide Tipped
Material	Stainless Steel Tubing
Stock Size	1¼" OD; ¾" ID
R. P. M.	Work Spindle — 1033 Opposed Spindle—1048
Time	7 Seconds per Cycle 3.5 Seconds per Piece

Conomatic} CONE AUTOMATIC MACHINE COMPANY, INC. WINDSOR, VT., U.S.A.

With the



Thrust Surface And Adjacent Diameter are both ground at once on the new Norton Type CV-4 semiautomatic wheel-slide grinder. And you get better quality results! Because this machine leaves a concentric grain pattern in the thrust surface finish — assuring a better seal surface and appearance than side wheel grinding can produce.



The Type CV-4 is available with hand table or hydraulic power table drive in swing capacities of 10" and 14", and work lengths of 18", 36", 48" or 72".

Norton Type CV-4 Semiautomatic Angular Wheelslide Grinder

you can do several grinding jobs at once

Now you can grind thrust surfaces and adjacent diameters in one automatic plunge grind operation! The new Norton Type CV-4 semiautomatic angular wheelslide grinding machine eliminates the separate operation on the shoulder or thrust surface that is normally necessary with conventional cylindrical grinders.

This alone means important savings in time and labor costs. And you get plenty of additional benefits from the Type CV-4's rapid grinding action, simplified operation and top-quality production.

Improved grinding wheel feed

The automatic wheel feed includes a "click-count" index, enabling settings for work diameter reduction in increments as fine as .0001" — instantly. Graduated wheel feed hand wheel, located to eliminate reaching, indicates amount of feed as it rotates. Both length and rate of automatic wheel feed easily adjusted from operating position.

Simplified operation

Operator merely loads; starts automatic cycle, and unloads. Fatigue is decreased, helping prevent production lag.

The automatic wheel guard truing device (optional) provides additional operating ease. Push-button control of straight, stepped or formed truing eliminates need of skill and reduces wheel cost per piece ground. In addition, the Type CV-4 can be easily adapted to special jobs with Norton-engineered chucking heads, locating and loading-assist equipment for greater productivity.

Easier, lower cost maintenance

Ramped outlet from coolant tank speeds clean-out . . . pumps and motors all outside and easy to reach . . . electrical controls all grouped in raised enclosure . . . base ways protected by steel tape guards, requiring no additional floor space . . . hydraulic oil and ways lubricant carried in outside reservoirs with large gauge-glasses.

For your own grinding jobs

investigate the many advantages of the new Norton Type CV-4 semiautomatic angular wheelslide grinder. See your Norton Representative or write direct for Catalog. And remember — only Norton offers you such long experience in both grinding wheels and machines to help you produce more at lower cost. NORTON COMPANY, Machine Division, Worcester 6, Mass. *In Canada:* J. H. Ryder Machinery Co., Ltd., Toronto 5.

To Economize, Modernize With NEW

NORTON

GRINDERS and LAPPERS

Making better products. . . to make other products better

District Sales Offices:

Worcester • Hartford • New York • Cleveland • Chicago • Detroit

Bigger output less tool wear

. . . fewer rejects **lower costs** when you do the job with **MX**

the freer-machining screw stock

THE increased production, the longer tool life, the smoother finish and the greater accuracy you can obtain with USS MX Free-Machining Steel all combine to pay off in *lower costs per part.*

USS MX has so consistently out-performed ordinary screw stock that we can tell you with complete confidence that MX will cut the cost of *any* part you now machine from regular Bessemer grades. (You can prove this for yourself by giving MX a trial on your own machines.)

In the hundreds of cases on which we have reports, cutting speeds with USS MX have been increased as much as 50%. Tools have lasted up to 200% longer. Boosts in output have averaged about 40%, range from 10% to 50%.

That's because USS MX works *with* your tools, not against them. USS MX was designed to ensure maximum cutting speeds compatible with economical tool life, and that's exactly what it does. As a result, production goes up and costs come down wherever you put free-cutting MX to work. What's more, the parts you make are *better* parts.

And here's another reason why USS MX is your best buy today. Despite the fact that it *costs no more* than ordinary screw stock USS MX *has been successfully machined at speeds approaching 350 SFM* — speeds far higher than the *average* (under 250 SFM) used in most shops today.

Furthermore the recent introduction of USS MX *Open-Hearth* Steels now gives you a choice of two superior free-machining grades—Bessemer *and* Open Hearth—so that you can select the screw stock that will give you the *best* properties for any specific application.

USS MX Free-Machining Steel is produced in all the popular screw stock sizes. It is sold in cold finished form by your regular supplier, either as "MX" or under his own identifying trade name. In hot-rolled form, MX is available through our nearest district sales office.

See "THE UNITED STATES STEEL HOUR"—Televised alternate weeks—Consult your newspaper for time and station.

UNITED STATES STEEL CORPORATION, PITTSBURGH • AMERICAN STEEL & WIRE DIVISION, CLEVELAND
COLUMBIA-GENEVA STEEL DIVISION, SAN FRANCISCO • TENNESSEE COAL & IRON DIVISION, FAIRFIELD, ALA.
UNITED STATES STEEL SUPPLY DIVISION, WAREHOUSE DISTRIBUTORS, COAST-TO-COAST
UNITED STATES STEEL EXPORT COMPANY, NEW YORK

USS

5-207

UNITED STATES STEEL

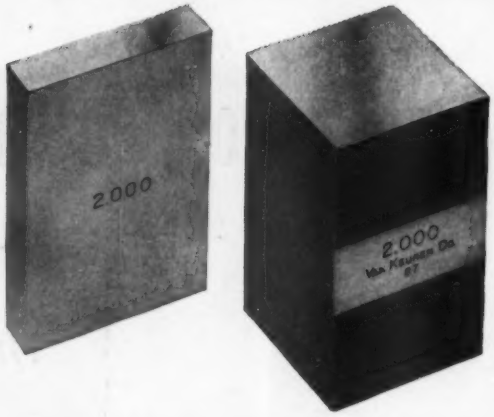
"VK" . . . the Sign of Pioneering and

GEAR MEASURING WIRES

The Van Keuren Gear Measuring System is generally accepted as the easiest and most accurate method of checking tooth thickness of gears, involute splines and involute serrations. Catalog and Handbook No. 35 contains complete information and tables for gear measurements with wires.

GAGE BLOCKS

The conventional Rectangular Gage Block shown, .360" x 1.375", area .50 sq. inches, is designed for ordinary use; the Solid Square Master Block, 1¼" x 1¼", area 1.56 sq. inches, is designed for many years' service, and unconditionally guaranteed against wear in excess of .0001" for 5 years. See Van Keuren Handbook for details.



WIRE TYPE PLUG GAGES

Made in all sizes from .010" to 1.000" diameter. Originated by Van Keuren. Recommended materials:
High Speed Steel, in sizes from .010" to .050"; Chromium Alloy Tool Steel, in sizes from .051" to 1.000"; Hard Chromium Plate, in sizes .016" to 1.000"; VK Carboloy, sizes from .016" to .500".

OPTICAL FLATS

Ideal for all kinds of flatness tests, checking parallelism with elimination of temperature errors. New Van Keuren Light Wave Measuring Equipment includes double-surface fused quartz optical flats and improved monochromatic light of proved superlative value and economy. See Van Keuren Handbook for complete information.

36 years
1919
1955

In the Van Keuren family of Precision Measuring Tools are included the world's most accurate—tools for checking to hundred-thousandths and millionths of an inch. Whether gage blocks, optical flats, plug gages or measuring wires are required, all will incorporate Van Keuren quality. And no commercially practical measuring tools are available today for closer tolerance determination than those which are being regularly and currently produced by Van Keuren for everyday use in the metalworking industry.

Should future precision standards demand even closer checking than is now practical, metalworking can look with confidence to Van Keuren pioneering and leadership to develop and provide such measuring tools as may be required.

THE Van Keuren CO.

173 WALTHAM STREET

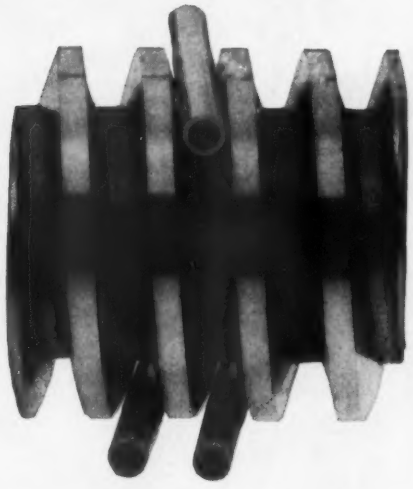
Leadership in Precision Measurements

LIGHT WAVE MICROMETER

The Van Keuren Light Wave Micrometer, furnished in 0 to 1", 0 to 2", or 0" to 3" models, is ideal for measuring plug gages or small precision parts. It can be used at measuring pressures of from theoretical zero to 2½ pounds. It is not a comparator and no gage block combinations are needed. To be used when you're after "that last hundred-thousandth" of an inch. See Van Keuren Handbook for details.

MICROGAGES

Van Keuren Microgages have been popular for over twenty-five years because they provide a low cost means of securing accuracy in the shop to meet the demands of the inspection department. These 7/8" diameter gages are now made to an accuracy of ±.000008". 81-block set $250.00
For standard sets, see Catalog No. 35.



THREAD MEASURING WIRES

Available for every purpose—for worms, splines, gears, standard and special screw threads. Illustration shows .2574" diameter Flush Wires in a 29° worm having 2 threads per inch. For multiple start worms having lead angles greater than 5°, see VK screw thread tables in Handbook which gives Exact Best Size wire and exact measurement over the wires. VK Thread Measuring Wires are standard everywhere.

CHROME CARBIDE TAPER INSERTS

In addition to its regular line of tungsten carbide wire type plug gages from .016" to .500" diameter, The Van Keuren Co. now offers a new line of Chrome Carbide Taper Insert Plug Gages in the range from .500" to 1.510" diameter. These lighter, longer-wearing gages are available in Class Y, X and XX accuracies, and *have a surface finish of .5 RMS or better.*

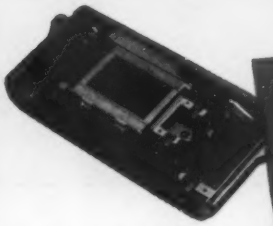
The metalworking industry has come to look to Van Keuren not only for precision measuring tools but also for the ways and means of applying them in the tool room and on the production line. Procedures developed by Van Keuren are in many cases standard shop practice today. We point specifically to gear measurement techniques, as applied regularly in today's gear-making shops and departments, most of which are a pioneering contribution by Van Keuren.

To make all this data and all the formulas required conveniently available, Van Keuren publishes its 224-page Catalog and Handbook containing material obtainable nowhere else under one cover—a Handbook of vitally important and usable information on Precision Measuring which is regularly revised and consistent with the most advanced practices and techniques in checking and measuring.

The current 1952 Van Keuren Catalog and Handbook, No. 35, is available on request and includes complete details on the Van Keuren family of Precision Measuring Tools.

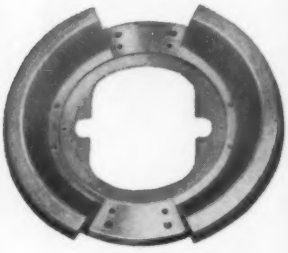
Light Wave Equipment . . . Light Wave Micrometers . . . Gage Blocks . . . Taper Insert Plug Gages . . . Wire Type Plug Gages . . . Measuring Wires . . . Thread Measuring Wires . . . Gear Measuring System . . . Shop Triangles . . . Carboloy Cemented Carbide Plug Gages . . . Carboloy Cemented Carbide Measuring Wires . . . Chrome Carbide Taper Insert Plug Gages.

WATERTOWN, MASS.

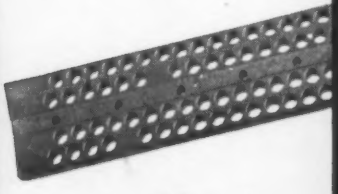


In Plastics

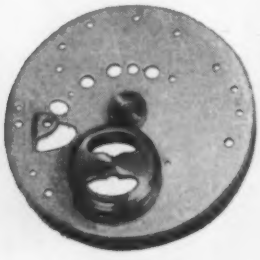
In Aluminum



In Cast Iron



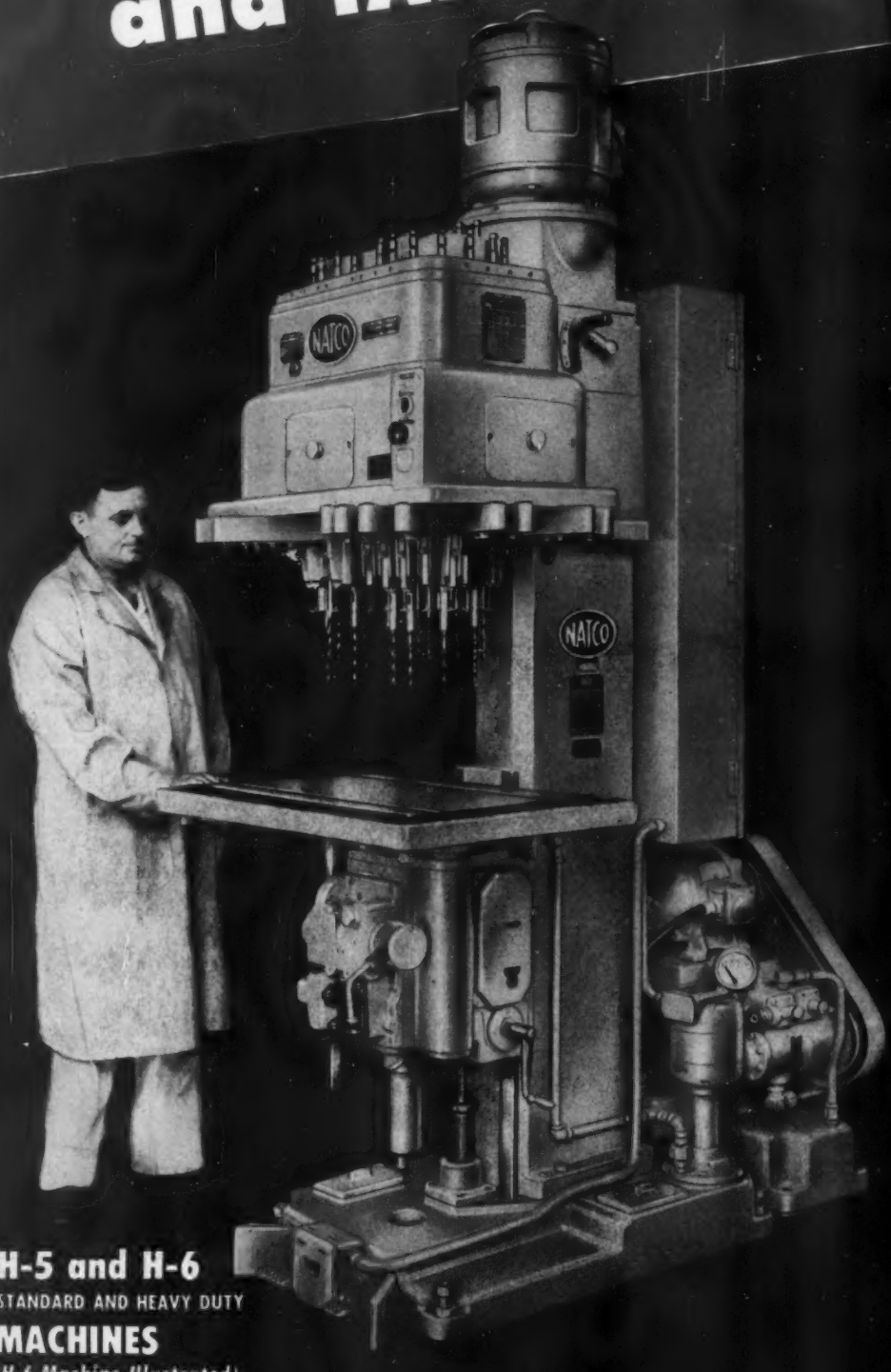
In Wood



In Steel

NATCO

HIGH SPEED, SENSITIVE MULTI-DRILLERS and TAPPERS

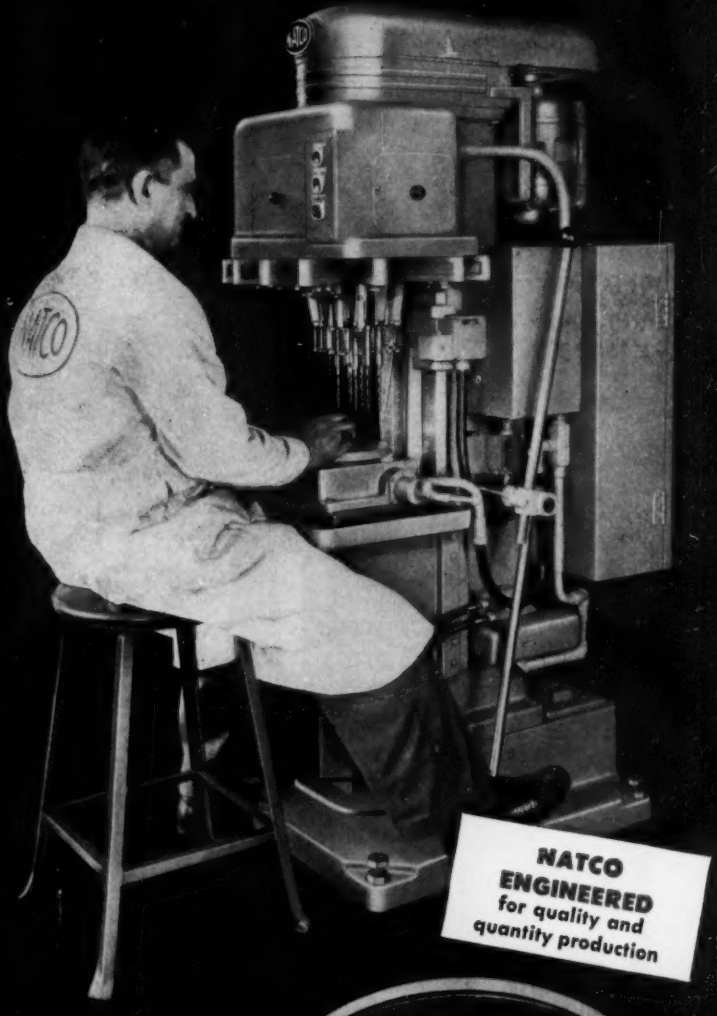


H-5 and H-6
STANDARD AND HEAVY DUTY
MACHINES
(H-6 Machine Illustrated)

...REDUCE COSTS WITH INCREASED PRODUCTION OF SMALL PARTS!

The NATCO Model B-33 light, sensitive multi-drilling and tapping machine shown at right is available in three feed arrangements: hand and foot feed or combination hand and foot and air-oil feed; and air feed. These machines have adjustable spindle arrangement for different work set-ups and a large working table. They offer maximum production on light work where super-sensitive operations and high speed are important.

NATCO H-5 and H-6 high speed sensitive multi-drillers and tappers are furnished in standard and heavy-duty models with adjustable multi-spindle, fixed center spindle or slip spindle type heads. They are provided with change gears and quick change speed mechanism for correct spindle speeds. They will efficiently handle a wide range of small and medium-sized work and make possible multiple drilling or tapping of small holes at minimum cost.



B-33
LIGHT, SENSITIVE
MACHINE

NATCO ENGINEERED for quality and quantity production

Call a Natco Field Engineer

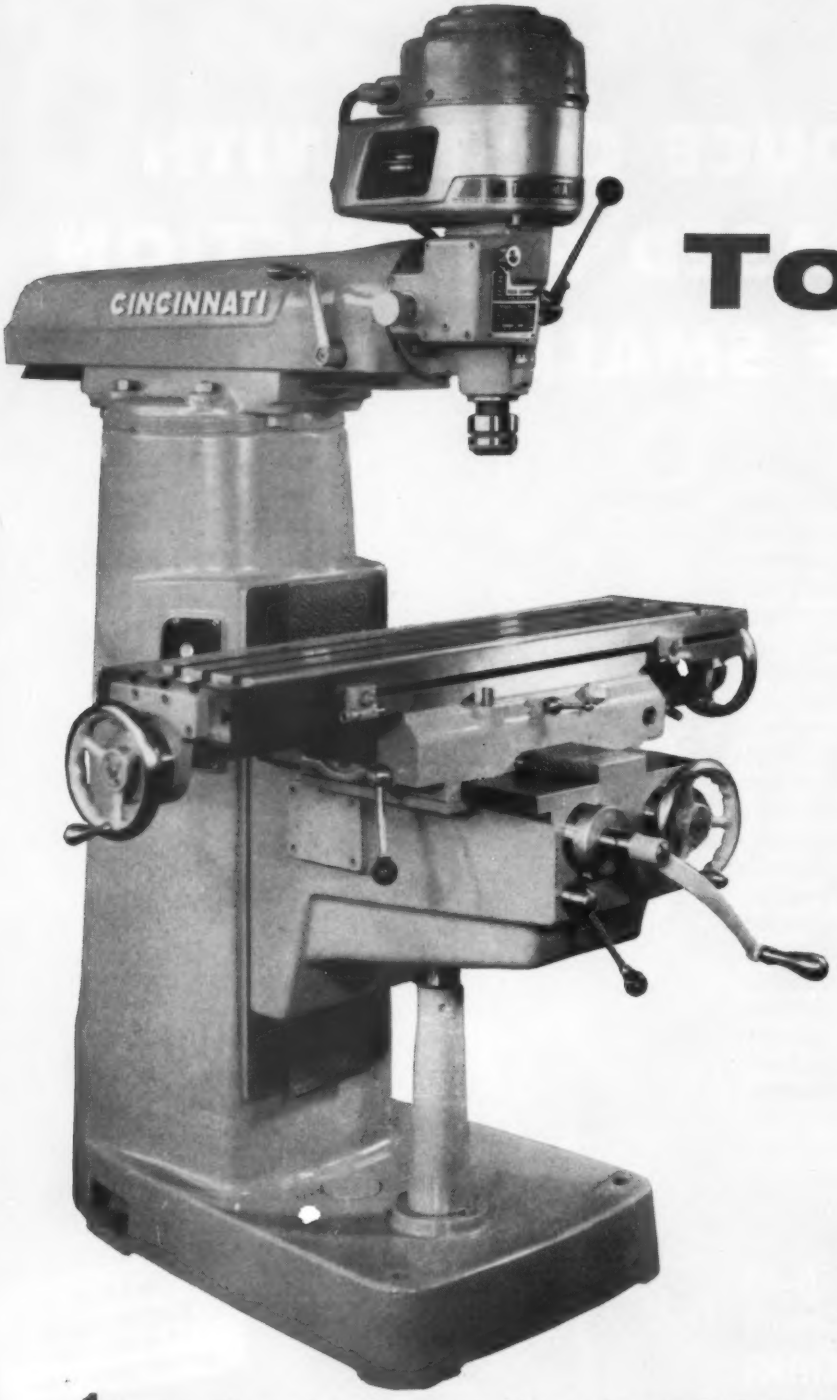
to help you solve your problems in Drilling, Boring, Facing and Tapping

NATCO

NATIONAL AUTOMATIC TOOL COMPANY, INC., Richmond, Indiana

Branch Offices

CHICAGO, Room 203, 6429 W. North Ave., Oak Park • DETROIT, 10138 W. McNichols Rd.
BUFFALO, 1807 Elmwood Ave. • NEW YORK, 35 Beechwood Ave., Mount Vernon



Toast of

CINCINNATI

Style 1B Toolmaster Milling Machine. Equipped with 1 hp spindle head; collet chuck type spindle nose, capacity ⅛" to 1" shank cutters; power feed to quill; worm positioning of swivel head. Catalog No. M-1870-1.

1 Heavier cuts can be taken in one bite on the new Toolmaster Milling Machine. In this illustration a heavy cut taxing the full hp of the motor progresses smoothly.

2 Maximum range setups on the new Toolmaster do not reduce rigidity. The cutting action is just as smooth for this long reach job as for any other.

3 The Toolmaster's smooth, accurate manual feed is a big help in milling the inside of box shaped sections . . . the operator can readily work with two hands on the controls while watching the cutter.

4 The Toolmaster Shaping Attachment adds shaping operations to the variety of milling jobs handled by these machines. The illustration shows how angular surfaces are shaped on a Toolmaster.

1

CINCIN

the shop

The new CINCINNATI Toolmaster is the most complimented milling machine on the market today. Everyone has something favorable to say about it:

"A real milling machine."

"Ruggedly constructed; takes heavy cuts."

"We did all the shaping operations required for this expensive die."

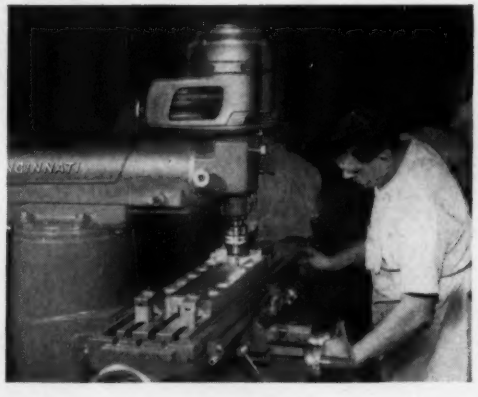
"Convenient to operate."

These are actual remarks by foremen, toolmakers and management. There are good reasons why the Toolmaster made such an instant hit with metalworking men . . . its design is based upon an extensive survey among users of light manually operated milling machines; in actual field tests the prototype model was operator-approved for performance, and management-approved as costs receded. ¶ Four typical tool and die setups are illustrated here. It's easy to see that there's a place for one or several Toolmasters in your shop. Get complete specs. now; write for new catalog No. M-1870-1.

THE CINCINNATI MILLING MACHINE CO., CINCINNATI 9, OHIO

2

3



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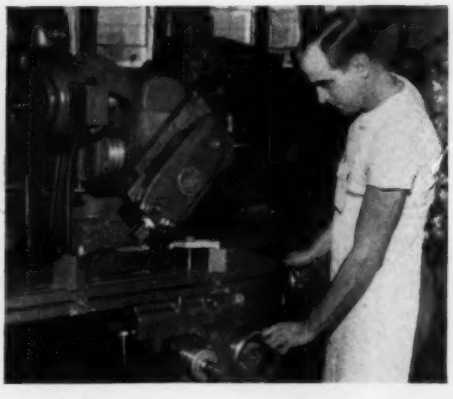


NATI MILLING MACHINES • CUTTER SHARPENING MACHINES • BROACHING MACHINES • METAL FORMING MACHINES • FLAME HARDENING MACHINES OPTICAL PROJECTION PROFILE GRINDERS • CUTTING FLUID

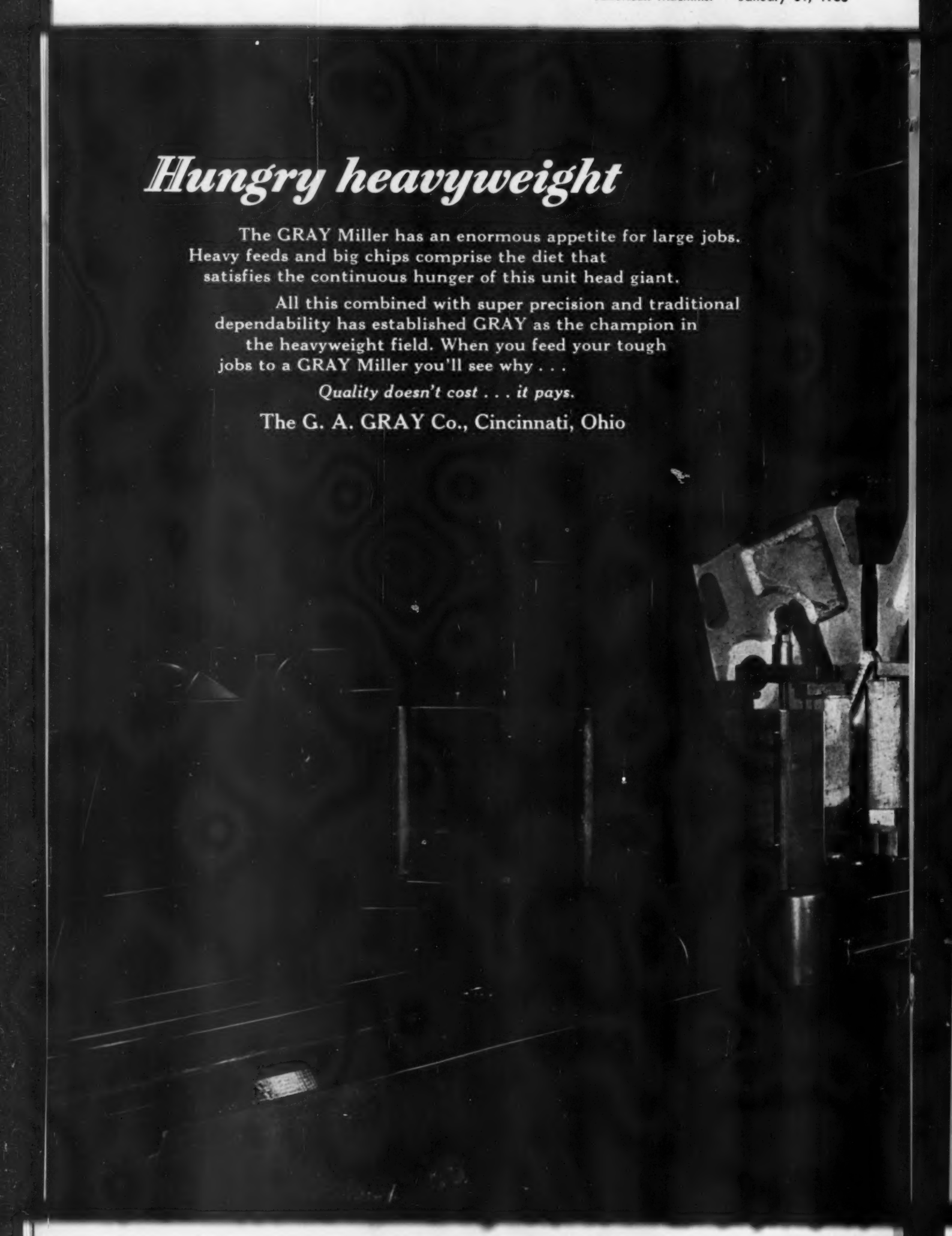
Hungry heavyweight

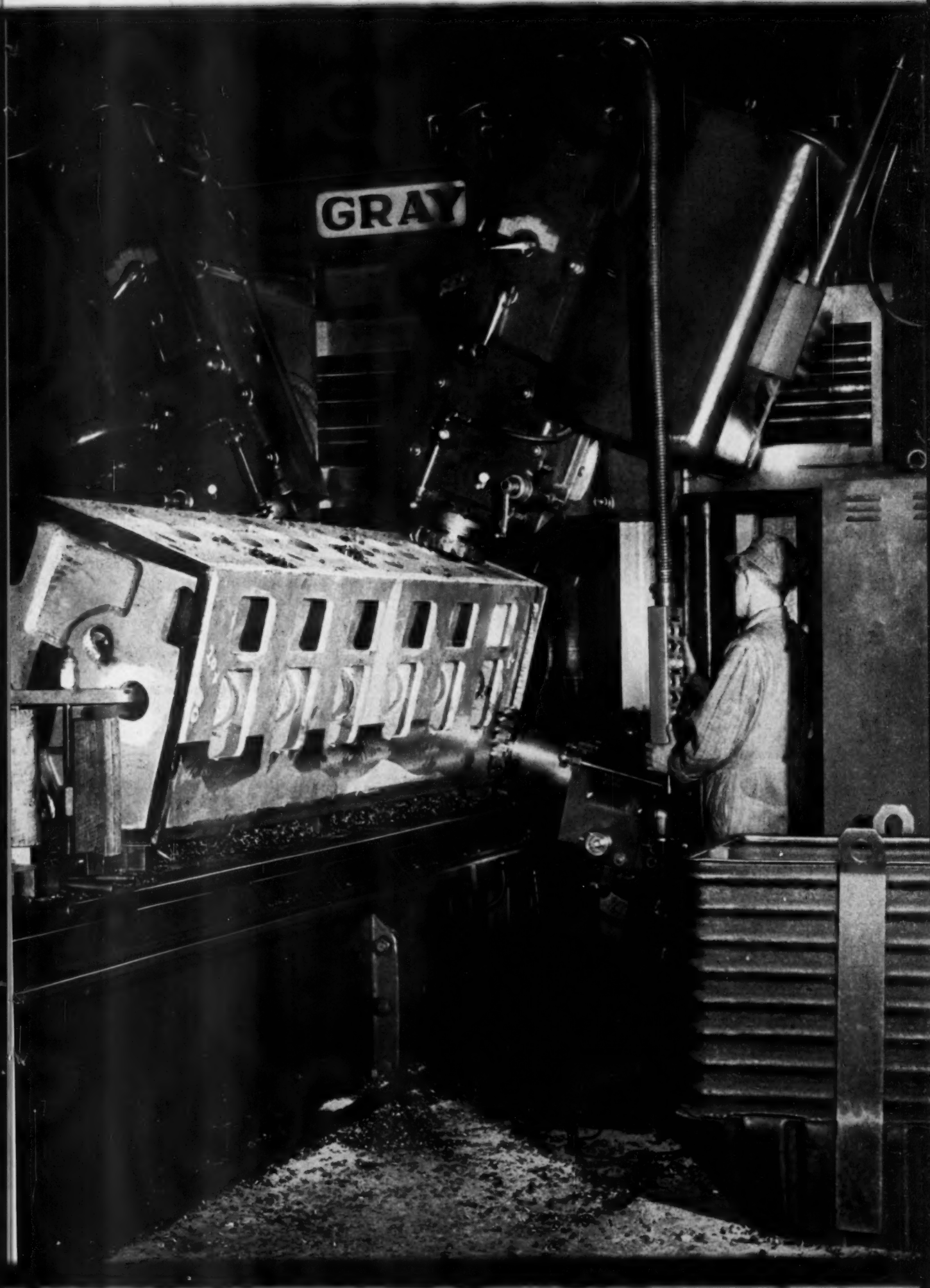
The GRAY Miller has an enormous appetite for large jobs. Heavy feeds and big chips comprise the diet that satisfies the continuous hunger of this unit head giant.

All this combined with super precision and traditional dependability has established GRAY as the champion in the heavyweight field. When you feed your tough jobs to a GRAY Miller you'll see why . . .

Quality doesn't cost . . . it pays.

The G. A. GRAY Co., Cincinnati, Ohio




GRAY

Here's another reason it pays to get a proposal from Fosdick

We put a table on the

When Fosdick engineers put a table on the radial, a unique and basic machine tool was born. This machine combines the best features of two proven, reliable designs. It gives you the capacity and flexibility of a radial—the rigidity, compactness and convenience of an upright. It's the machine you need when you want versatility and economy in limited floor space.

The arm of the Sensitive Radial swings 360° on the rigid one-piece column. Controls are always at the same convenient height. Work is placed on the adjustable table, *or* on the base with the table swung out of the way. Drills up to 1½". 12" column, 3' or 4' arm, nine speeds, four feeds, 3 hp motor, reversing motor control for tapping.

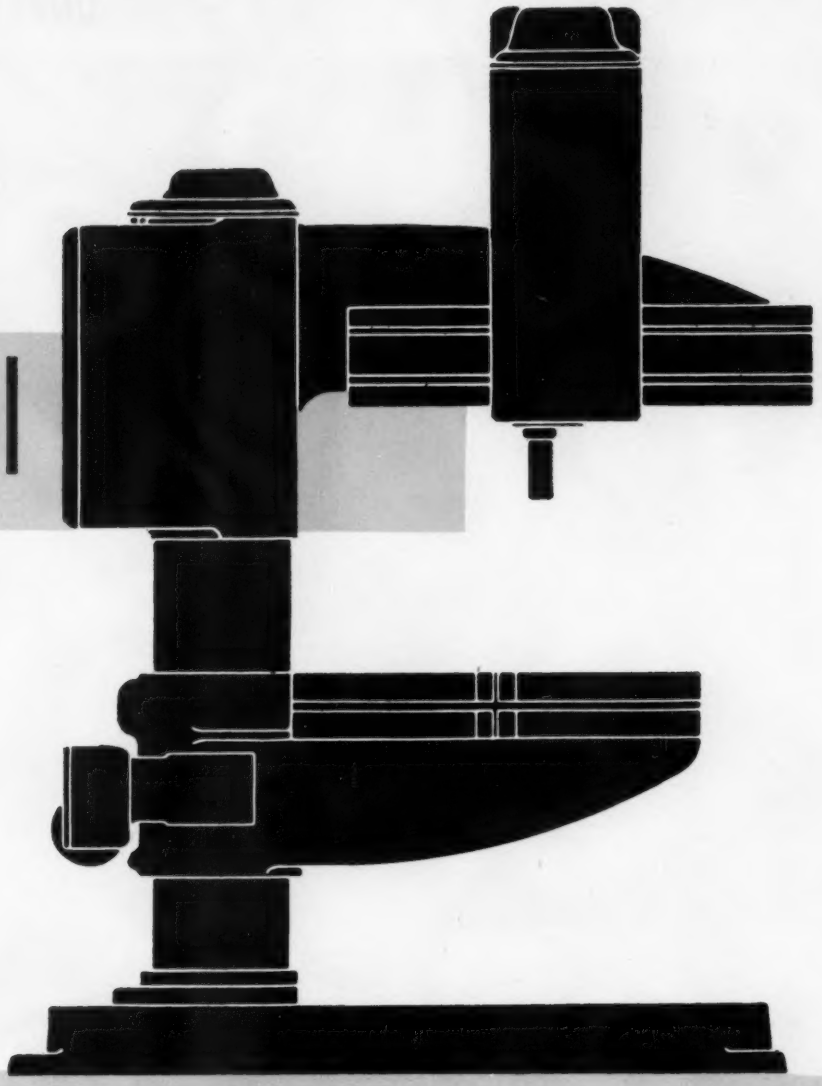
For full information on the Sensitive Radial, ask for Bulletin SRA

to give you

Variety problem solved at Lodge & Shipley

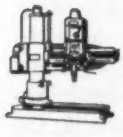
Building 46 lathe models from 14" to 60" requires plenty of production versatility. To drill and tap a broad variety of vari-shaped parts, *Fosdick's proposal* recommended the Sensitive Radial. Now Lodge & Shipley assigns tool blocks, levers, cam plates, spindles and many more complex parts to their Fosdick, knowing it will produce fast and easily. *Operation illustrated:* Tailstock spindle clamped to table vee. Drill, chamfer and tap 4 holes. 17/64" drill, 1020 rpm, .004 ipr, 7/8" deep. Chamfer, 1020 rpm. Tap 5/16" x 18 thread using Automatic Tapping Control (extra equipment), 240 rpm, 1/2" deep.

radial

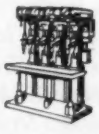


versatile production like this

Need Drilling Equipment? Get a Proposal from Fosdick!


Radial Drills

Jig Borers

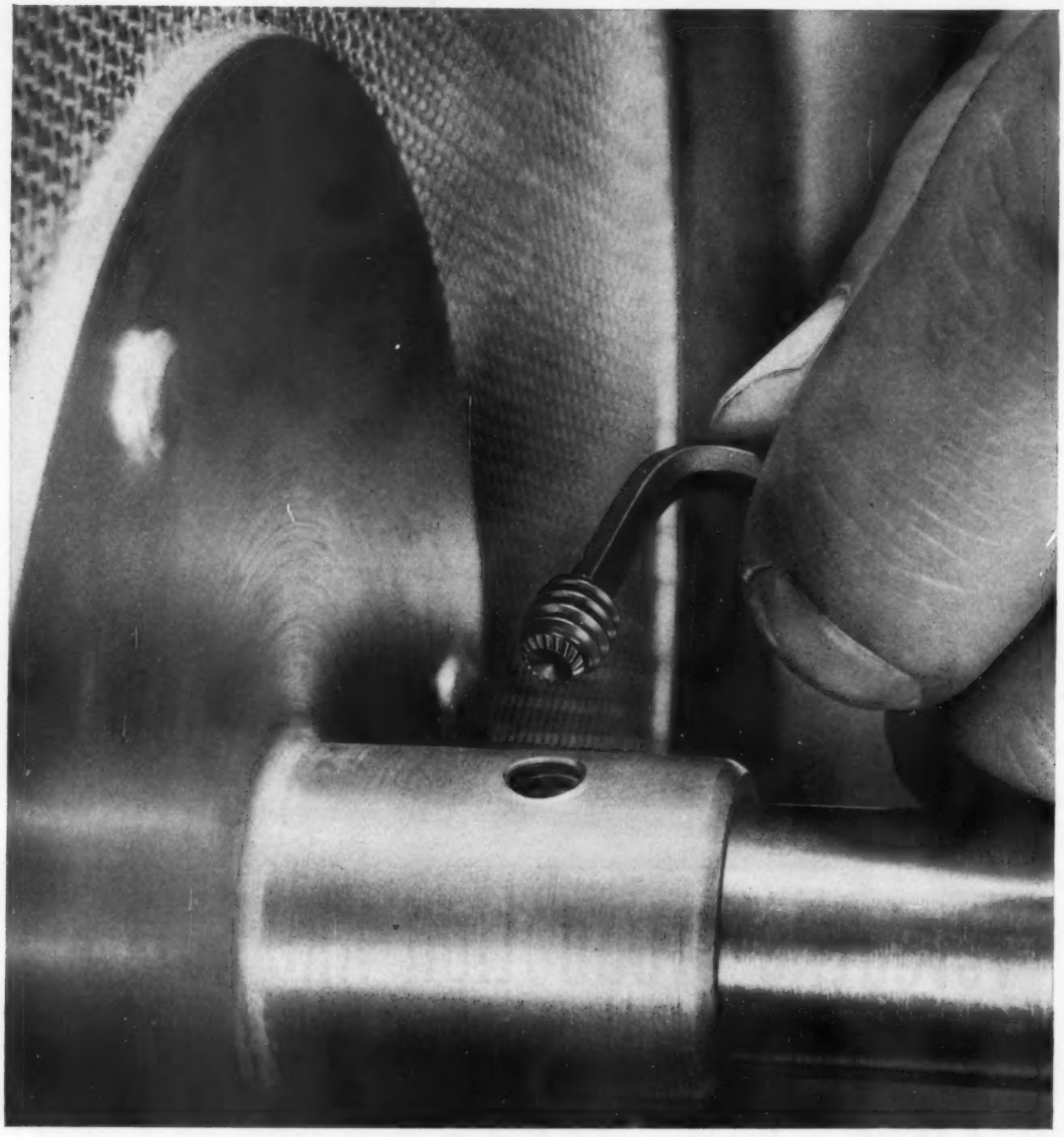

Sensitive and Upright Drills

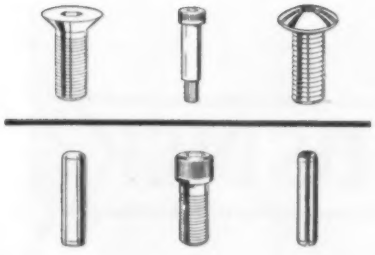
Sensitive Radial Drills

Automatic Positioning Machines

FOSDICK

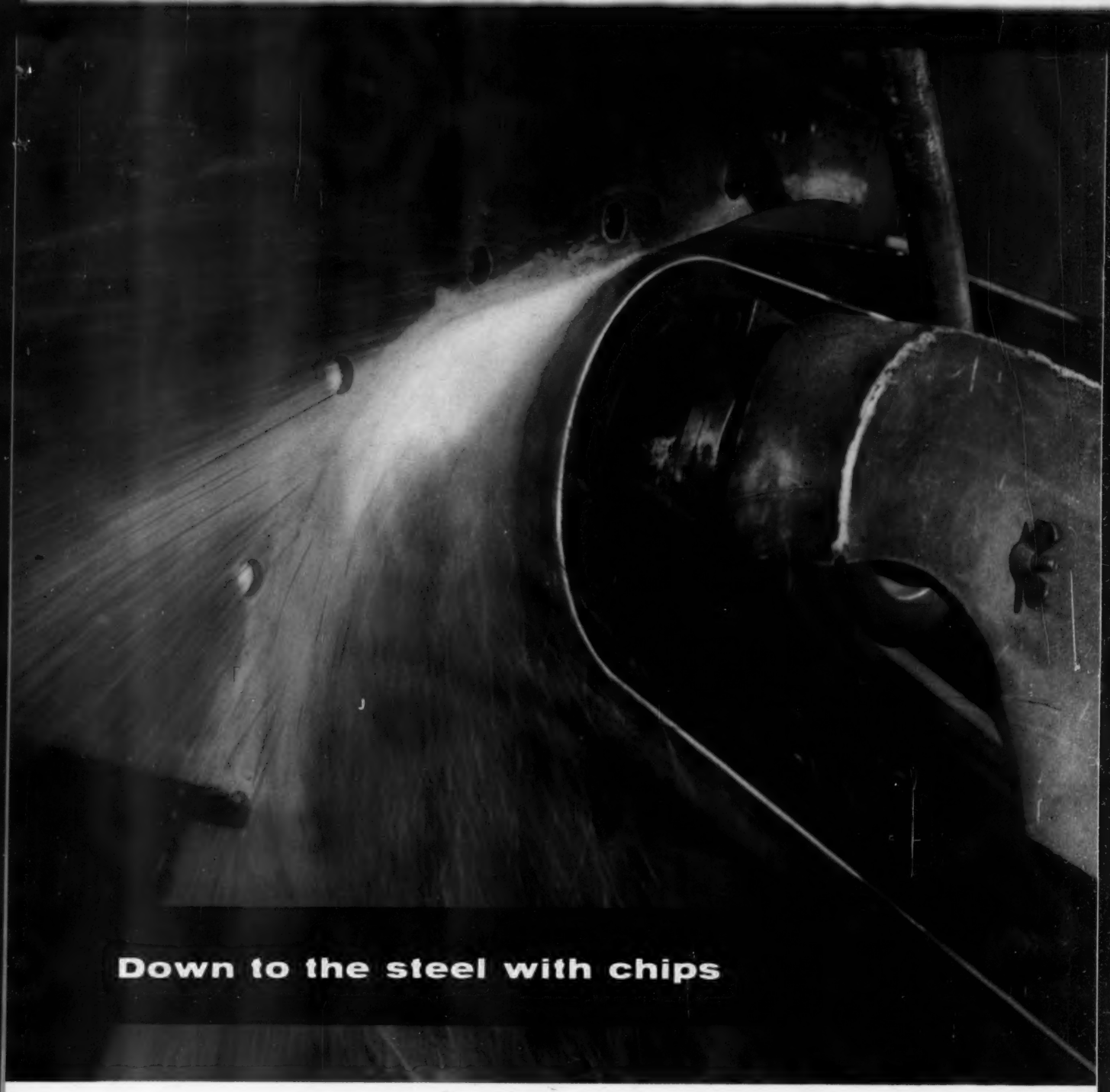
THE FOSDICK MACHINE TOOL CO., CINCINNATI 23, OHIO





HOW TO KEEP A SET SCREW TIGHT. Tighten it as tight as possible. Keep it in place by preventing it from starting to work loose. With UNBRAKO Self-Locking Socket Set Screws you can do both. They are designed for the highest recommended tightening torques in the industry—as much as 45% higher than those used for ordinary socket set screws. UNBRAKOS have the unique knurled cup point which prevents them from starting to work loose, even in poorly tapped holes. For the complete UNBRAKO story, see your industrial distributor—or write STANDARD PRESSED STEEL CO., Jenkintown 1, Pa.

UNBRAKO® SOCKET SCREW DIVISION SPS JENKINTOWN, PENNSYLVANIA



Down to the steel with chips

A glance at the spark flow tells you this CARBORUNDUM® Brand Abrasive Belt removes huge amounts of stock . . . fast. But that's not all—it also produces uniform finish, eliminates extra operations. The versatility and economy demonstrated by this swing frame belt grinder is yours to command on *any* metalworking operation, from deburring and polishing to weld grinding and snagging, with Abrasive Belts by CARBORUNDUM. They cut fast, cool . . . give smooth, even finish . . . long, useful life. Whether you use ½" belts on deburring machines, 74" belts on stainless steel sheet polishers—or any size between—your CARBORUNDUM Distributor is a good man to know. He offers expert counsel, complete stocks, prompt service.

Through application "know-how" and product quality

CARBORUNDUM

REGISTERED TRADE MARK

continually puts more sense in your abrasive dollar

Slice through any metal in *seconds*—12 to 20 times faster than with a power hacksaw. Keep tolerances within thousandths... eliminate deburring and smoothing needed after shearing or flame-cutting. Do all this—and lower production costs, too—with Abrasive Cut-Off Wheels by CARBORUNDUM. Rubber Bond for wet cutting... smooth, clean, close-tolerance cuts—free from burr, discoloration and other surface change. Resinoid Bond for dry cutting... when speed is more essential than finish. Tough, reinforced CARBOFLEX Wheels for more severe operations, including portable cut-off. Get expert counsel from your CARBORUNDUM Distributor or Salesman. He's ready to serve you—with complete stocks, prompt delivery.

Through application "know-how" and product quality

CARBORUNDUM

REGISTERED TRADE MARK

continually puts more sense in your abrasive dollar

Added Evidence that . . .

Everyone Can Count on VEEDER-ROOT

In figuring out new systems of automatic electrical control, Veeder-Root *Count*rol can supply vital connecting links. For instance, this Predetermining Counter can be hooked into such a system to light a light, ring a bell, or actuate a mechanism to stop a machine or process *at any pre-set point.* And there are many other Veeder-Root Counters that can serve as "countponents" in almost any way desired. Or special counters can be designed for specific applications. Engineers in any industry, now engaged in working out automatic control systems, can count on Veeder-Root engineers to work with them on any problem where reliable facts-in-figures are needed.

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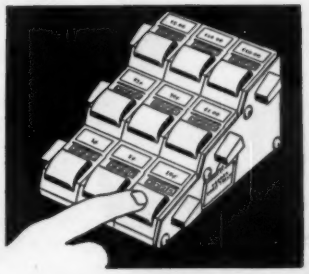
"The Name That Counts"



New *Vary-Tally* Multiple-Unit Reset Counter comes in any combination up to 6 banks high, and 12 units wide Write for news sheet and prices.

STYLE "B" MASTER FEED FINGERS and PADS

HARDINGE
ELMIRA, N.Y.

Pads Cannot Work Loose
No Screws No Pins

STYLE "S" MASTER COLLETS and PADS

The only Master Collet
with no Work Pressure on the Screw

COLLETS
for
ALL
AUTOMATICS
CHUCKING MACHINES
TURRET LATHES

COLLETS
for
ALL
LATHES
and
MILLERS

Complete Capacity
Round, Hexagon and Square

HARDINGE-SJOGREN

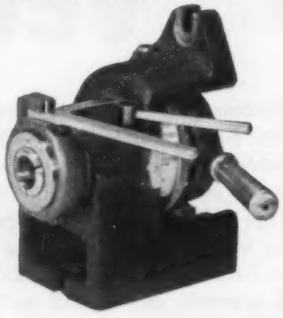
SPEED

COLLET CHUCKS

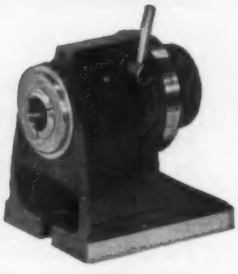
Five Sizes: 1" 1⅜" 1¾" 2¼" and 3½" Collet Capacity

For: Threaded, Tapered Key-Drive, Cam-Lock, and American Standard Spindles.

HV-4 Production



H-4 Tool Room·Inspection



INDEX FIXTURES

Increase Production by
Holding Work Accurately and
Indexing Rapidly.

Stock Delivery from:

Hardinge Brothers, Inc.
7 South Main Street
West Hartford 7, Conn.

Hardinge Brothers, Inc.
269 Lafayette Street
New York 12, New York

Hardinge Brothers, Inc.
Pennsylvania Corporation
4013 Walnut Street
Philadelphia 4, Penna.

Hardinge Brothers, Inc.
70 Stratford Avenue
Dayton 2, Ohio

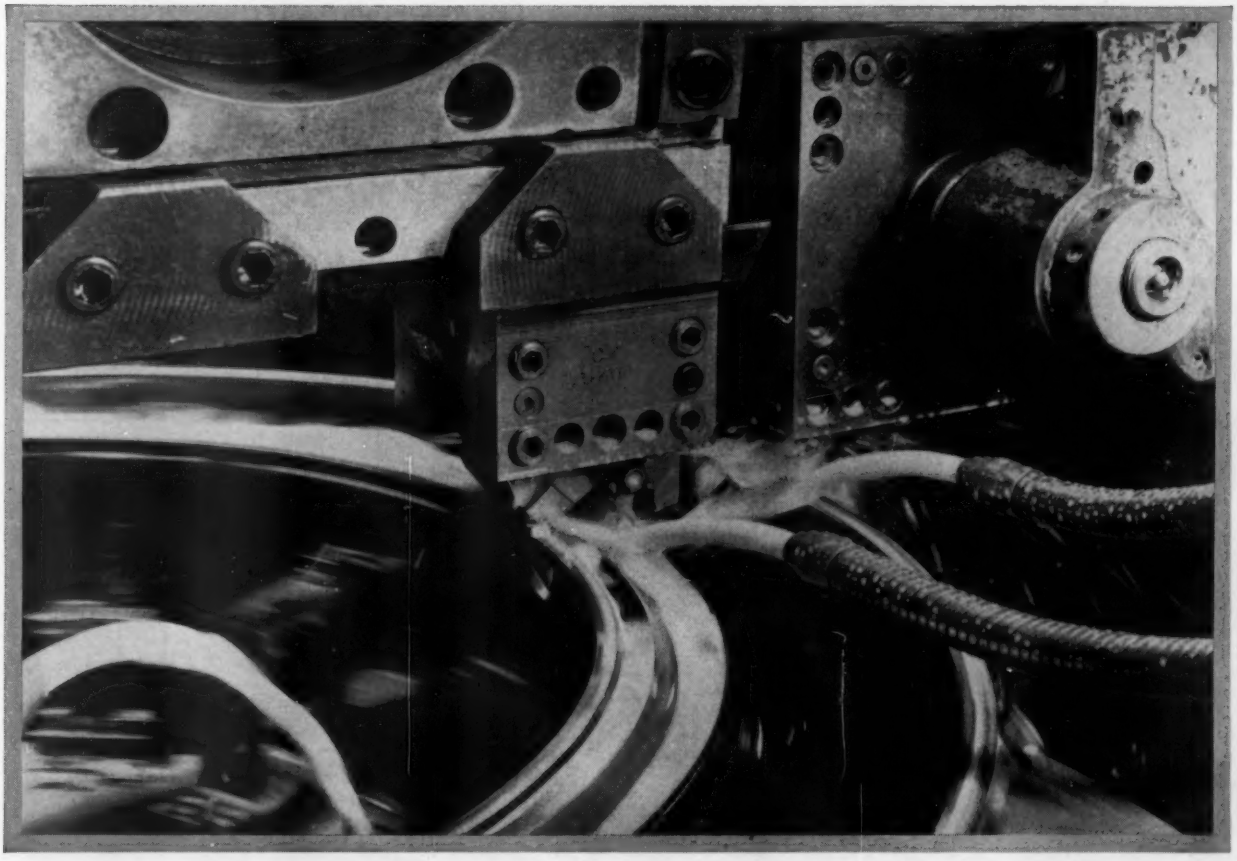
Hardinge Brothers, Inc.
5244 W. Diversey Ave.
Chicago 39, Illinois

Hardinge Brothers, Inc.
4460 Cass Avenue
Detroit 1, Michigan

Hardinge Brothers, Inc.
2711 East 11 St. at Soto
Los Angeles 23, California

Industry-wide records
prove that . . . as compared with other
steel-cutting carbides . . .

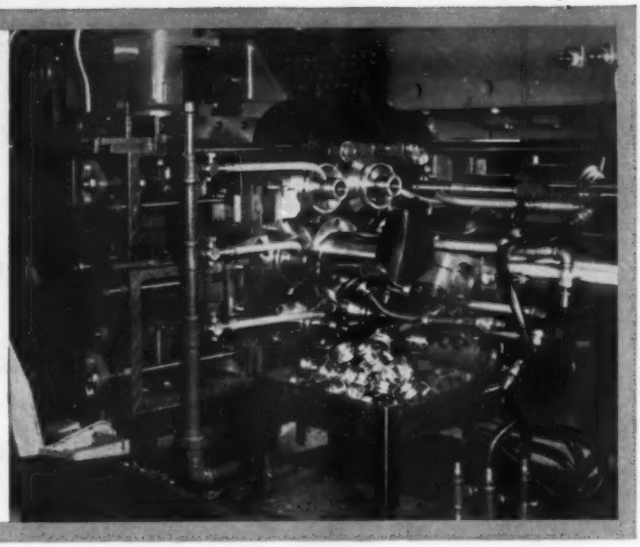
Carboloy® Grades 350, 370 carbides increase production as much as 3⅔ times



BEFORE CARBOLOY GRADE 370, 17 other carbides were tried by the Jet Division, Thompson Products, Inc., for facing 310 stainless-steel jet-engine compressor frames. The best any carbide could do was 3 pieces per 8-hour shift. With Grade 370, production jumped to 14 pieces. Tool life was doubled; tool inventory was lowered. Downtime losses were cut because Grade 370 inserts machined almost 3 times as many pieces per grind.

SETUP: Material—310 Stainless steel. **Speed**—340 SFPM. **Feed**—0.008 inch. **Depth of cut**—0.100 inch at 36 rpm. **Coolant**—Yes.

For other reports of new production and efficiency records set with Series 300 carbides, see the following pages.



PRODUCTION TIME WAS CUT IN HALF when Grade 370-equipped tools were installed in this Cone 6-spindle bar automatic. Seven Grade 370 tools did the job of fourteen high-speed steel tools for machining inner bearing races.

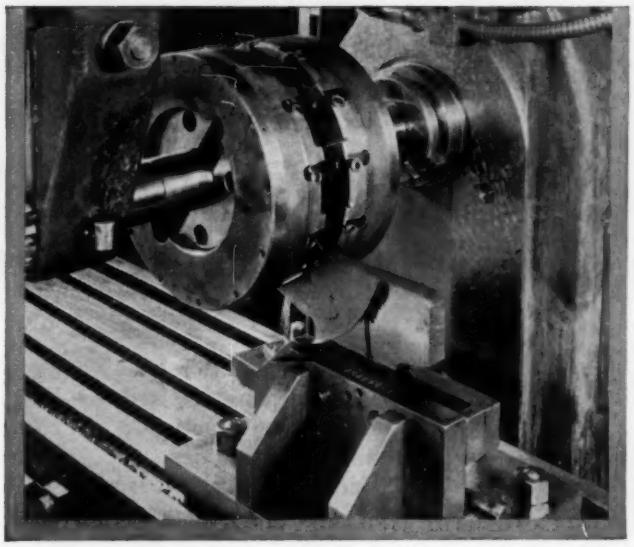
SETUP: Material—SAE 52100 steel tubing. **Speed**—333 SFPM. **Coolant**—Yes.

Case-history proof of how . . .

New Carboloy Steel-cutting

PRODUCTION WAS INCREASED more than 33% when Carboloy Grade 350 tools were used to turn this AISI 4150 48" truck axle forging. Grade 350 machines front and back ends simultaneously; eliminates chipping and flaking encountered with other carbides.

SETUP: Material—AISI 4150 steel forging. **Speeds**—200 SFPM on 2-inch dia.; 400 SFPM on 4-inch dia. **Feeds**—0.014 inch. **Depth of cut**—1/16 to 1/8 inch. **Coolant**—Yes.



SWITCHING TO GRADE 370 inserts, for straddle milling this forging, enabled Robert H. Brooks Co. to go from almost no production to completely satisfactory production. Grade 370 held tolerances to the required thousandths on this jet fighter wing fitting; produced so fine a finish that it is impossible to determine the blend line after plating.

SETUP: Material—SAE 4140 forging, heat-treated between 40 to 43 Rockwell C. **Speed**—650 SFPM. **Feed**—0.0025 inch per tooth. **Depths**—0.062 inch and 0.083 inch. **Coolant**—Yes.

Grades outcut, outlast all other carbides

Here's why Series 300 carbides will immediately bring you increased production and greater operating efficiency:

1. Grades 350 and 370 have been designed for you to get the most out of your machine tools. They can operate without tip deformation at higher speeds and faster feeds than other carbides. This built-in production ability lets you take full advantage of your equipment.
2. Grades 350 and 370, proved by in-plant records, give more production per grind, more grinds per tool, more production per shift. In short, in hundreds of operations similar to those on these pages, they have outperformed other carbides in every respect.

Carboloy Series 300 carbides are made by a new carefully controlled process. This process gives Series 300 a built-in structural rigidity, which enables them to operate at temperatures as high as 1800° F. . . temperatures that cause cutting-edge deformation in other carbides.

You can get Carboloy cutting tools, boring tools, inserts and blanks of Grades 350 and 370 in a wide range of styles and sizes. Your Authorized Carboloy Distributor can fill your orders immediately. For the new Series 300 price list GT-305, send coupon on the next page, today.

Carboloy Created-Metals for Industrial Progress

Your Authorized Carboloy Distributor
can meet your steel-cutting needs from his...

New, enlarged line of Series 300 tools and blanks

With the addition of 117 new sizes of standard tools and blanks, your local Authorized Carboloy Distributor can now give you immediate delivery on practically every Grade 350 and 370 tool and blank you need. Many other sizes and styles are available nonstock from the Carboloy plant in Detroit.

Carbides for cutting all materials

In addition to the Series 300 carbides, complete stocks of Carboloy tools and blanks are available in various grades, for machining all materials—ferrous or nonferrous, metallic or nonmetallic.

The following standard-grade items have also been recently added to the standard line:

- 20 sizes of Grades 883 and 44A style 0000 blanks for heavy-duty cast-iron and nonferrous cutting.
- Throwaway-type blanks.
- Grade 883 style F and G offset turning tools in ½ and ⅝ inch sizes.
- Offset threading tools.

For price lists and specifications on Series 300 carbides and standard grades, send coupon today.

"Carboloy" is the trademark for products of the Carboloy Department of General Electric Company

CARBOLOY
DEPARTMENT OF GENERAL ELECTRIC COMPANY

MANUFACTURERS OF CEMENTED CARBIDES, PERMANENT MAGNETS, THERMISTORS, HEVIMET, AND VACUUM-MELTED METALS

CARBOLOY
Department of General Electric Company
11149 E. 8 Mile Blvd, Detroit 32, Michigan

☐ Send Brief-a-Log GT-305, containing price list and specifications on Grades 350 and 370.

☐ Send Brief-a-Log GT-285, containing price list and specifications on standard grades.

Name_____ Title_____

Company_____

Address_____

City _____ Zone___ State_____

See the Yellow Pages

. . . for the name of your local Authorized Carboloy Distributor. You'll find his name under the Carboloy trademark listing in classifications: TOOLS or TOOLMAKERS.

Visit Carboloy Booth 456
at the
ASTE Western Industrial Exposition
Los Angeles, March 14-18

Eliminates 3 costly operations with DENISON® MULTIPRESS

Three time-consuming operations eliminated.

Production doubled.

A better product at less cost.

. . . all because of a switch to Denison hydraulic Multipress.

At The Nye Rubber Company, Barberton, Ohio, the old method for trimming flash from molded rubber wheels required cutting, freezing, tumbling, buffing and washing—with parts loaded and unloaded by hand for each operation. Now, a 4-ton Multipress trims flash automatically.

The operator simply loads parts, which are carried under the ram by a Denison Index Table. One smooth hydraulic stroke trims the flash neat and close. Air blows the finished product down a chute for packing. The rate for one operator: 2400 parts an hour.

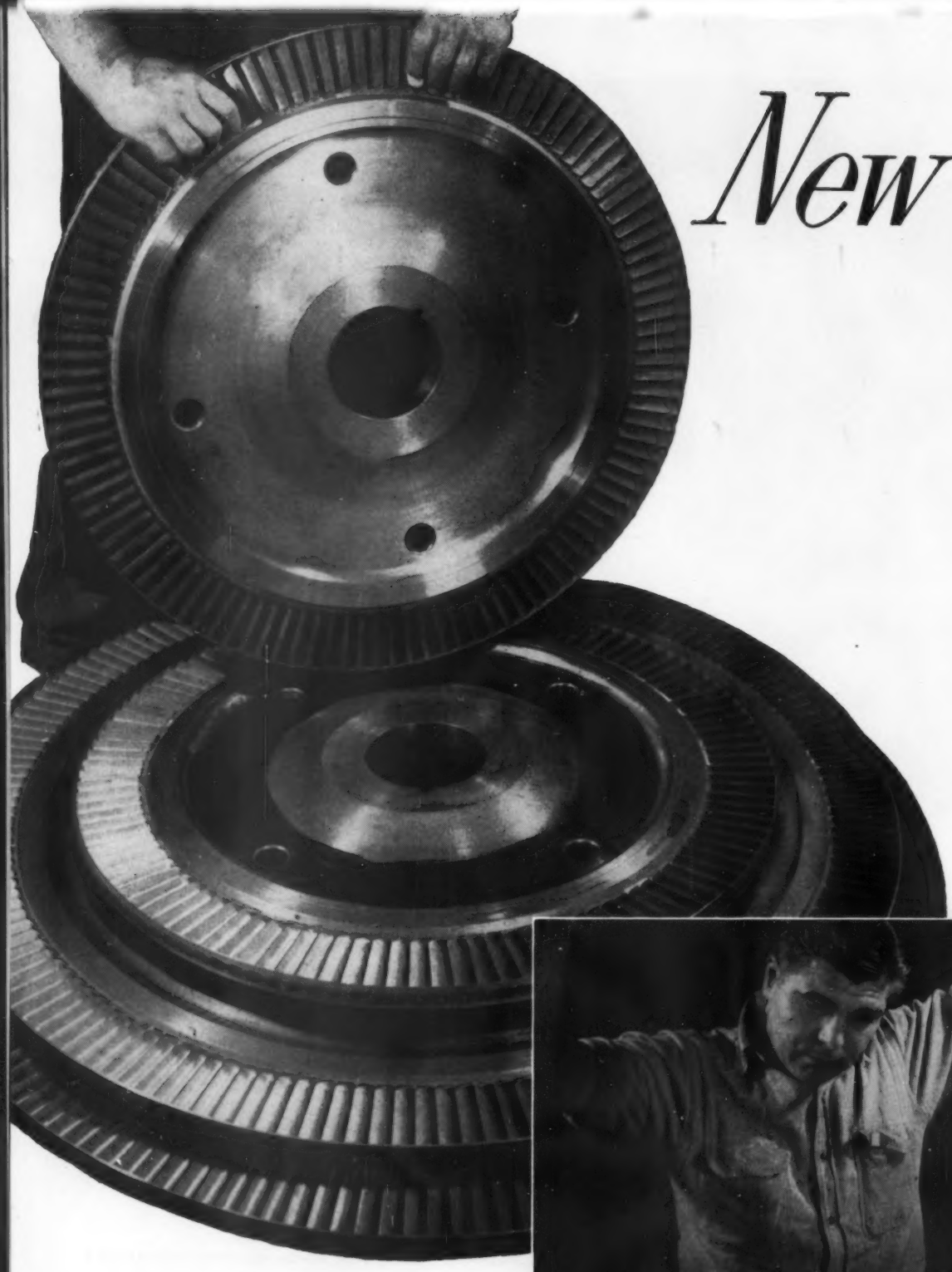
A switch to Denison Multipress could cut costly operations in your plant. Write for cost-cutting ideas and technical bulletins.

THE DENISON ENGINEERING COMPANY
Dublin Road • Columbus 16, Ohio

DENISON Hydr**OIL**ics

HYDRAULIC PRESSES
PUMPS • MOTORS • CONTROLS

New USS



Elliott Company uses quenched, tempered, and stress relieved circles of "T-1" steel in 1 1/16" to 3 1/2" thicknesses. Circles are contour machined: 1 1/4" steam balance holes are drilled in the web, and the shaft hole is bored and keyed. Grooved seat is then machined.

"T-1" Steel cuts material cost 60% in rotor discs of small turbines

Provides high strength at high temperature, and stability at high speed of rotation

■ The Elliott Company, Jeannette, Pennsylvania, makes industrial steam turbines for driving pumps, fans, blowers, and other rotating equipment. The steel for the turbine discs must withstand high stresses at high temperatures and at speeds as high as 6,000 rpm. It must be sound throughout. That's why Elliott Company has switched to new USS "T-1" Steel in these discs.

"T-1" provides a minimum yield strength of 90,000 psi. and good creep rupture strength to 900°F. It poses no severe fabrication problems. What's more, "T-1" *costs 60% less* in this turbine application than the alloy steel previously used. And the switch to "T-1" required *no change* in design.

Although USS "T-1" Steel is comparatively new, it already has proved well suited to a great variety of applications. In addition to great high-temperature strength, it has extraordinary toughness at temperatures *far below zero.* It has excellent resistance to impact abuse, impact abrasion, and atmospheric corrosion. By taking advantage of these superior properties, you can reduce the size and weight, increase the strength and durability, and reduce the cost of such varied equipment as pressure vessels, power shovels, draft lines, storage tanks, conveyors, bridges, and towers. Where field fabrication or repairs are necessary or desirable, "T-1" cuts costs still further because it can be welded or flame cut *either in shop or field without preheating or stress relieving.*

Send the coupon for complete information.

United States Steel, Room 4623
525 William Penn Place
Pittsburgh 30, Pa.

☐ Please send me your booklet "United States Steel presents T-1" which contains the full story of "T-1" steel.

☐ Have your representative get in touch with me.

Name .....

Address .....

City ..... State.....

UNITED STATES STEEL CORPORATION, PITTSBURGH • COLUMBIA-GENEVA STEEL DIVISION, SAN FRANCISCO
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UNITED STATES STEEL EXPORT COMPANY, NEW YORK

USS "T-1" CONSTRUCTIONAL ALLOY STEEL

USS

SEE THE UNITED STATES STEEL HOUR. It's a full-hour TV program presented every other week by United States Steel. Consult your local newspaper for time and station.

5-259

UNITED STATES STEEL

milling, drilling, tapping machine yields

93.4% the first 9 months

Avey

Can you afford to ignore an investment that returns 100% in less than a year? It doesn't seem likely, yet many plant operators hold down milling, drilling, and tapping operations to the capacity of standard machines.

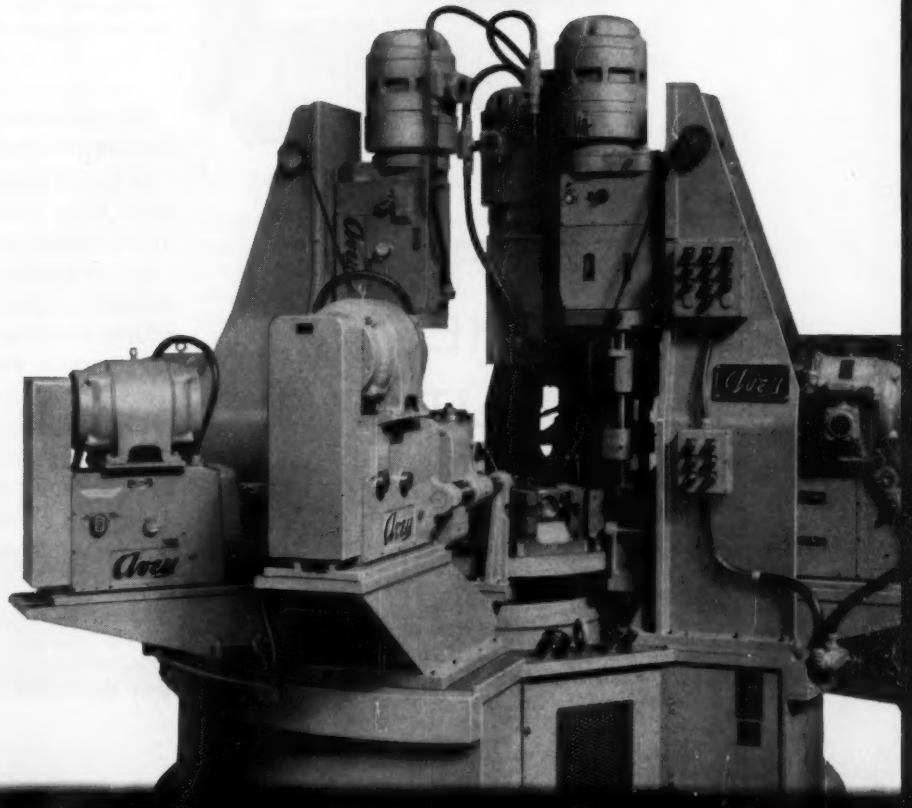
In contrast, the owner of this Avey production machine made high returns on this cast iron pump body (it may be similar to yours): 1 operator instead of 6; floor space cut from 600 to 180 sq. ft.; time per part from 5 minutes to 42 seconds. Put these figures in profit-and-loss terms and you see why the Avey machine pays off so fast.

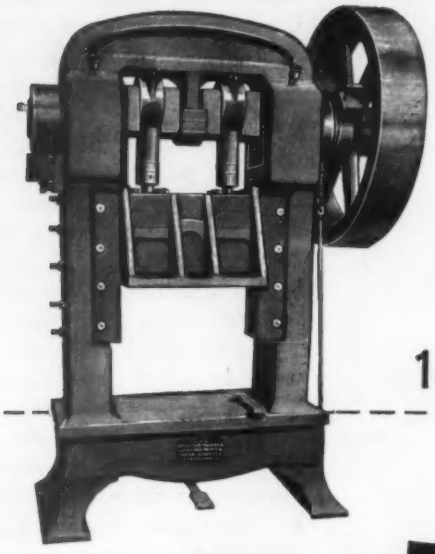
The machine has 10 Avey No. 2 Cam Feed units, a standard ribbed steel base, and standard automatic index table. Fixtures: rigid cam type. All units and the table are electrically interlocked; J.I.C. control panel. Production: 85 parts/hr. at 100% efficiency. ▶ *This machine has now been re-engineered for a different part*—so economically that even higher gains are expected this year.

Whatever your cash situation, new tax laws and Avey's pay-as-you-produce plan enable you to make this fast-earning investment now. Send a print of your part, state desired production rate, and ask Avey for a *profit prediction*.◀

THE AVEY DRILLING MACHINE CO., CINCINNATI 1, OHIO

drilling, tapping, production machines





1880

1955

Cleveland S2-350-84-48 Two Point Press, double geared, equipped with Drum Type Friction Clutch, air brake on flywheel and air counterbalance to slide; capacity—350 tons.

PREPARED FOR THE FUTURE

1955 marks the seventy-fifth anniversary of the founding of The Cleveland Punch and Shear Works Company.

On this our seventy-fifth year we express our sincere appreciation to the customers we have been privileged to serve and who have made possible our continued expansion and growth.

We look to the future with confidence in the knowledge that our many years of close association with the metal working industry have prepared us for greater accomplishments in the years to come. We take this opportunity to rededicate ourselves to ever greater service to our customers by continuously improved machine quality and performance.

After seventy-five years of machine tool progress we are proud of the past and prepared for the future.

AA-696

THE CLEVELAND PUNCH & SHEAR WORKS CO.

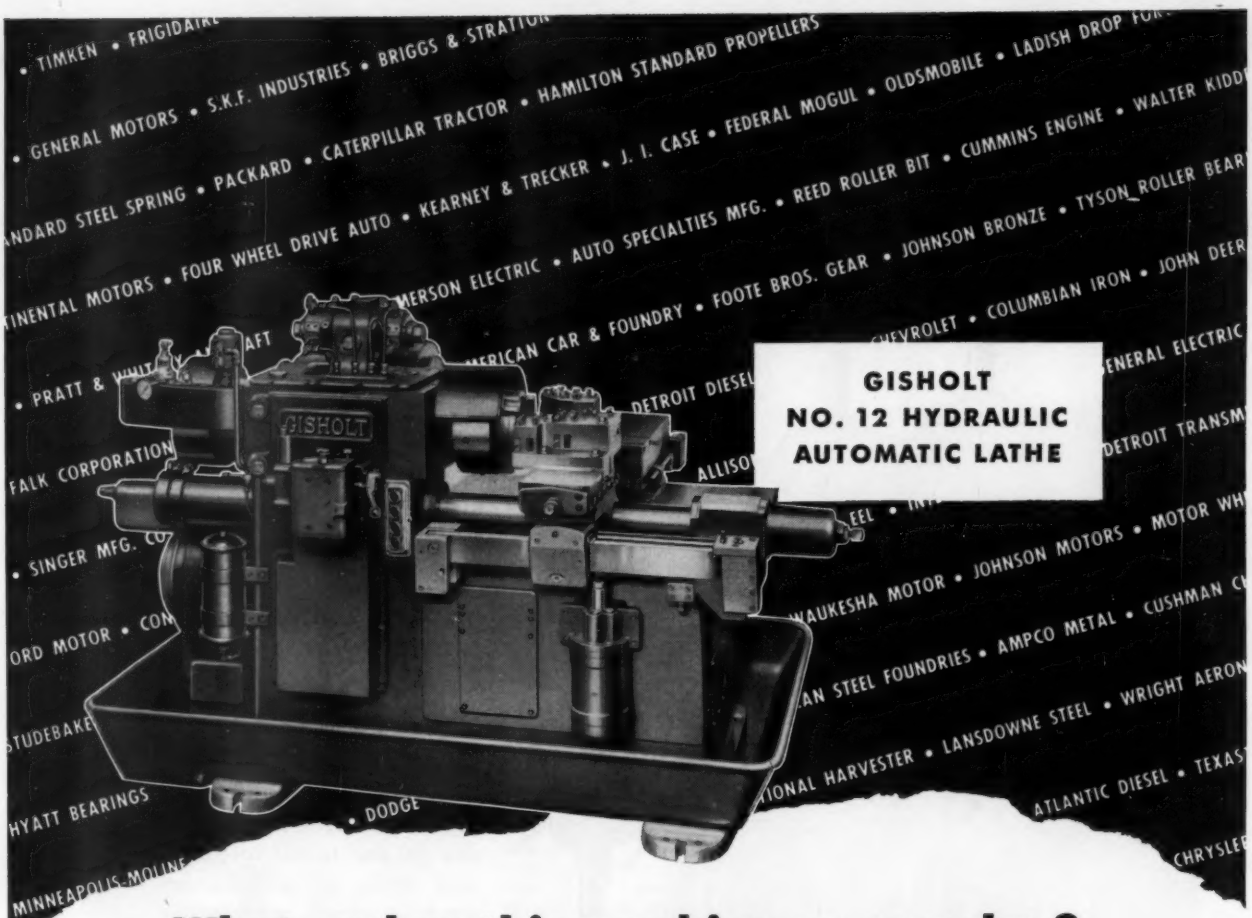
Established 1880

POWER PRESSES – FABRICATING TOOLS

E. 40th & St. Clair Avenue, Cleveland 14, Ohio

Offices at: NEW YORK • CHICAGO • DETROIT
PHILADELPHIA • E. LANSING • OXFORD, O.

CITY FOUNDRY DIVISION • SMALL TOOL DEPARTMENT



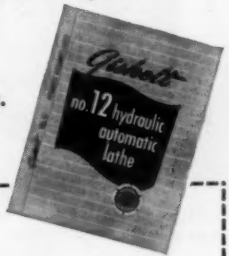
What makes this machine so popular?

It's the simple basic application of hydraulic principles—perfected through the years. It's a single spindle machine that handles all classes of work—holding with a chuck or an arbor, with fixtures, or with a work driver for between centers. Front carriage alone will perform 14 different cycles. Independent rear slide can be positioned at any angle to the work. Feeds are infinitely adjustable...not limited by cams. Here's the versatility, the speed, the automatic cycle, and the easy change-over that mean big savings for scores of users. Why not for you?

If you have parts up to 12″ to produce at lower cost, look at the Gisholt No. 12 Hydraulic Automatic Lathe. Call your Gisholt representative. Or write us.

This new catalog will show you why.

All operating features are clearly described, fully illustrated. Here, too, are 28 different jobs to show many classes of work and tooling possibilities. Write for your copy.



THE GISHOLT ROUND TABLE
represents the collective experience of specialists in the machining, surface-finishing and balancing of round and partly round parts. Your problems are welcomed here.

GISHOLT MACHINE COMPANY
Madison 10, Wisconsin

TURRET LATHES • AUTOMATIC LATHES
SUPERFINISHERS • BALANCERS • SPECIAL MACHINES

Gisholt Machine Company
Madison 10, Wisconsin

Please send my copy of the catalog describing the Gisholt No. 12 Hydraulic Automatic Lathe.

Name.....*Title*.....

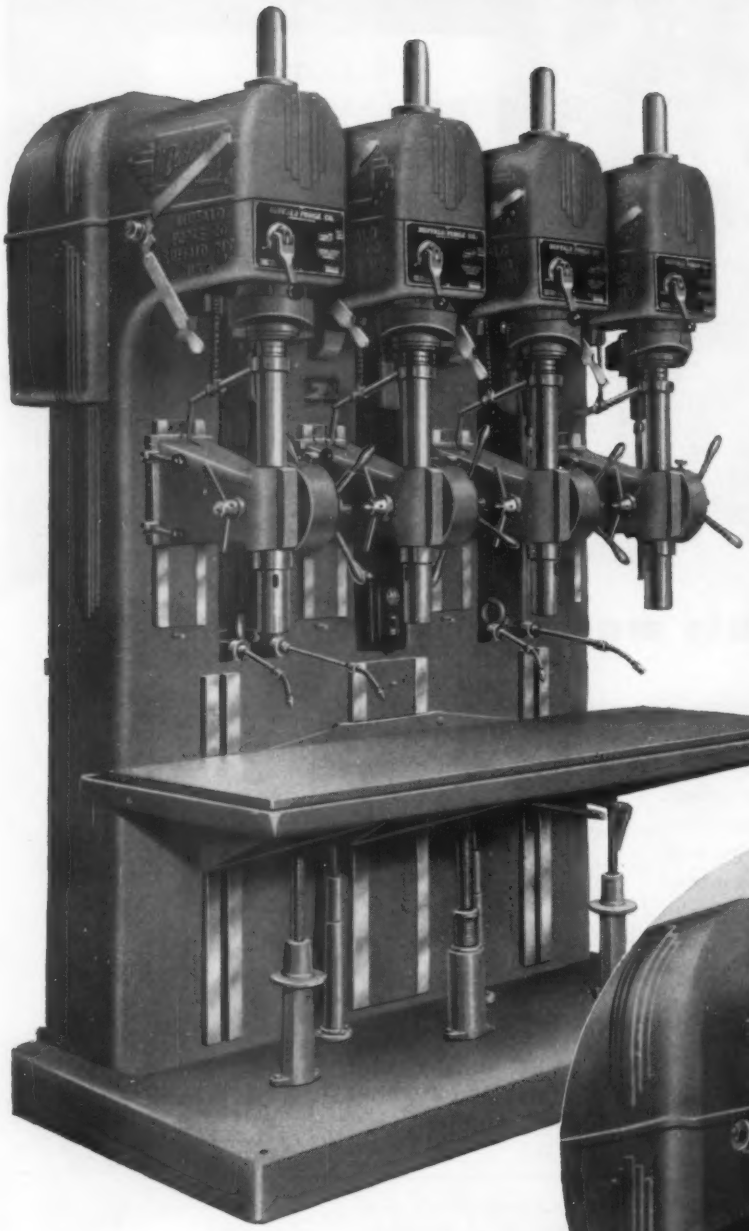
Company.....

Address.....

City.....*State*.....

"Buffalo"

FOR MORE YEARS
The Drills Built

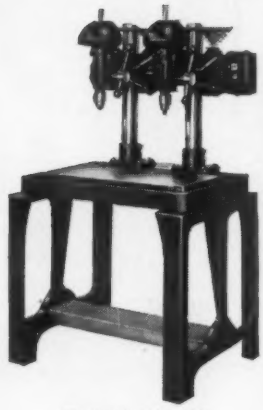


On these two pages, there's a "Buffalo" Drilling Machine that can cut your costs on any job. We know this, because these husky, precision-built machines have been doing it for industry for many years. "Buffalo" Drills are easy and convenient to operate, durable and trouble-free. And in every one, you get an extra bonus—*the "Q" Factor—the built-in Quality which provides trouble-free satisfaction and long life*—that has been in "Buffalo" products for 78 years.

For drills you'll be glad you bought, millions of holes later, write for Bulletins on any of the drills shown. They're all available in one to six spindle models with a wide choice of modifications to suit your setup.

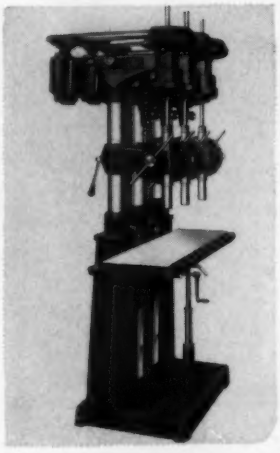
The "RPMster", Drill of 1001 Speeds, for plants that insist on the finest! Here is instant spindle speed control (with motor running), back gearing and all-geared power feed. Shown is our 4-spindle model with coolant system. Write for Bulletin 3257B.

OF LOWER COST DRILLING
Specifically For Industrial Service!

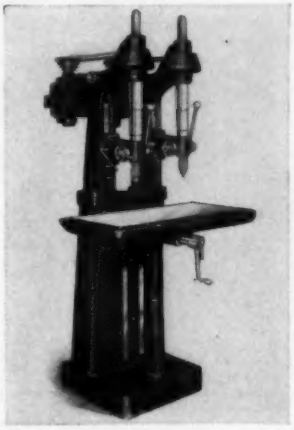


"Buffalo" No. 15 2-spindle Drill

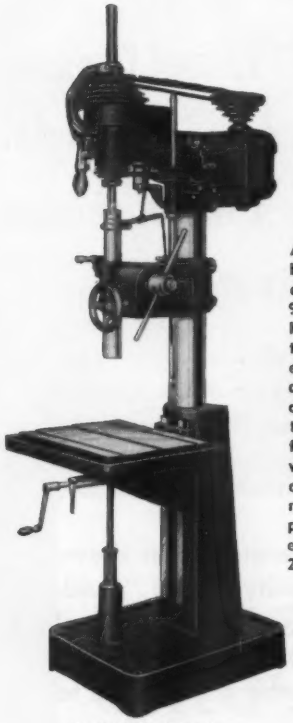
HEAVY - DUTY PRODUCTION up to ½" capacity! Many models of this sturdy, versatile No. 15 Drilling Machine to handle a wide variety of work at profitable speed. Write for Bulletin 2963-F.



Sensitive or power feed—choice of 8", 12" and 16" overhangs—plus many excellent features—make these ¾" capacity No. 16 Drills one of the best buys in the industry. Shown is the 3-spindle Pedestal Model. Write for Bulletin 2730-G.

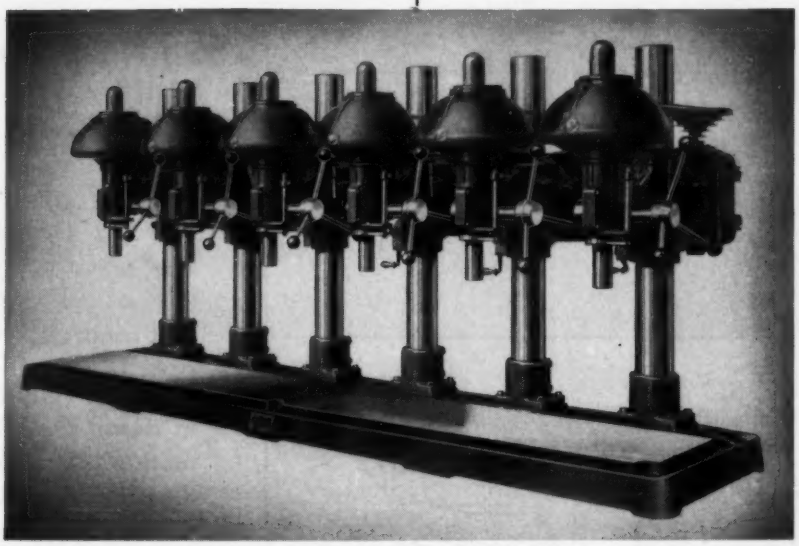


FOR PRECISION DRILLING in the tool room and manufacturing of precision parts, the ⅜" capacity No. 14 Drill is unexcelled. Bench or pedestal types, single or multiple spindle. Write for Bulletin 2726-D.

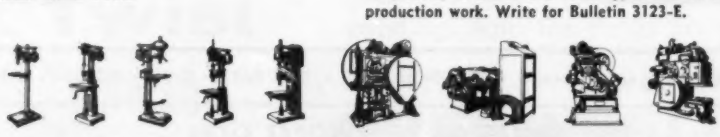


"Buffalo" No. 22 Pedestal Model Drill. Power feed.

Another "best buy," this machine is 94" to 97" high, yet has controls that are as easily reached as in small machines! Extremely sturdy for the heaviest work. Sensitive or power feed, round column or pedestal models. Bulletin 2989-F.



1" CAPACITY HIGH GRADE GENERAL PURPOSE DRILLS. "Buffalo" No. 18 Drills are available in 19 models, in bench and floor types and in multiple units up to 6 spindles. For general shop and production work. Write for Bulletin 3123-E.



BUFFALO FORGE COMPANY

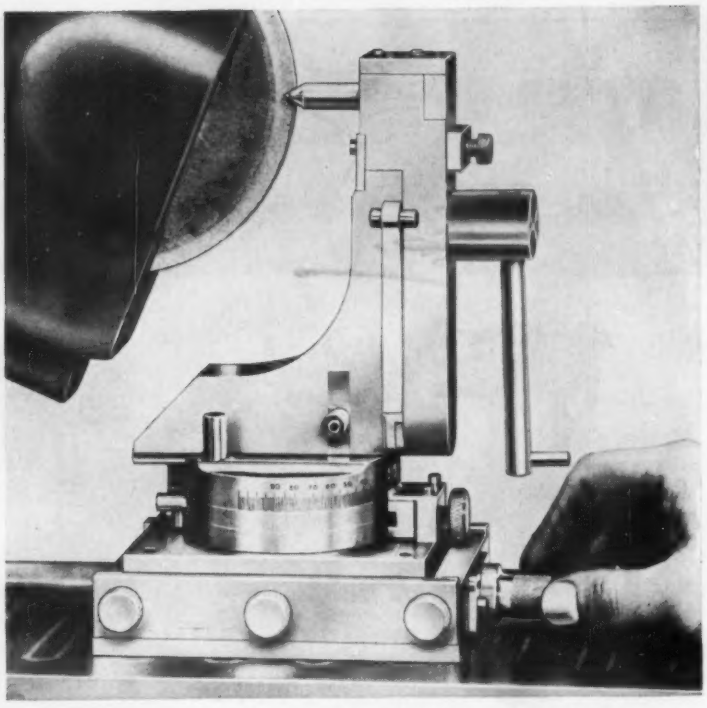
509 BROADWAY BUFFALO, NEW YORK

Canadian Blower & Forge Co., Ltd., Kitchener, Ont.

DRILLING • PUNCHING • SHEARING • BENDING

"Buffalo"

EASY AS---, 1, 2, 3



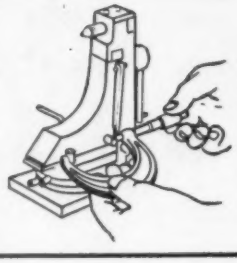
YOU CAN DRESS WHEELS UP TO 24" IN DIAMETER WITH J & S "FLUIDMOTION" WHEEL DRESSERS. MODEL REC SHOWN HERE.

Measure over diamond point to back of micrometer plate.

1

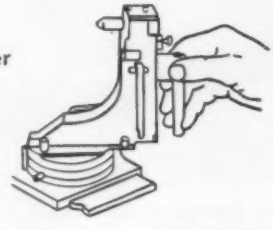
Add required convex radius or *Subtract* required concave radius.

2



Tighten gib. Dresser ready for action.

3



The J & S "Fluidmotion" Wheel Dresser can be set in seconds to dress any angle. Complex concavities or convex shapes can be set in a few minutes.

Fully adjustable with swivel base and patented "Fluidmotion", there is no other method that gives you the "precision flexibility" and ease of dressing simple or complicated shapes and contours.

Write for fully illustrated literature that shows in detail the wide adaptability of the "Fluidmotion" Dresser for just about any wheel dressing job. It comes in several sizes that will dress wheels ranging from the smallest up to 24 inch diameter.

J&S TOOL CO., INC.

WHEEL DRESSERS • JAW CLAMPS • PRECISION VISES • SINE BARS • DOWN-HOLDING DEVICES

REPRESENTATIVES IN PRINCIPAL CITIES

J & S TOOL CO., INC.

646 WEST MT. PLEASANT AVENUE, LIVINGSTON, NEW JERSEY

Yes, That's a Twist Drill

A few minutes ago it was a bar of high speed steel equal to that used in any drill to be found. Now this steel is being *further* refined and toughened by hammer forging, the process universally used by the makers of high quality tool steels.

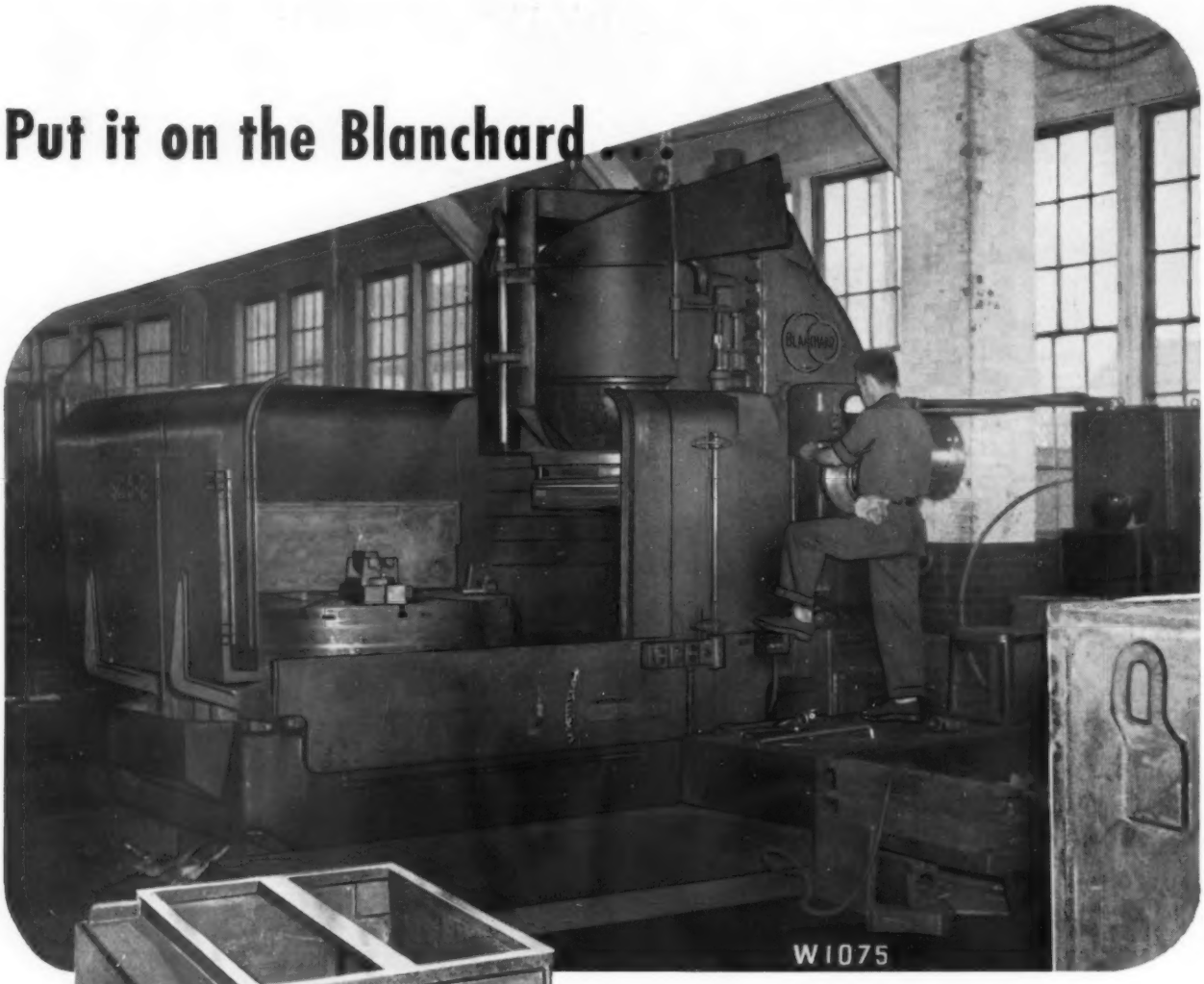
All GTD-AMPCO drills over 1″ are hammer forged before twisting. And the flutes are polished, too!

AMPCO TWIST DRILL DIVISION

GREENFIELD TAP and DIE CORPORATION

Greenfield, Massachusetts

Put it on the Blanchard . . .



it takes 1/5th the time!

Here is another example of the special jobs Blanchard Surface Grinders perform *in less time*, to exacting specifications.

These explosion-proof control cases are used in the coal mining industry. Each steel weldment case is 36" x 48" x 24" deep. Because gaskets cannot be used, surface finish, and flatness must provide a dust and gas explosion-proof metal seal.

A Blanchard Surface Grinder, the No. 32-60, removes approximately ⅛" of stock — in *one-fifth* the machining time formerly required.

Send a sampling of your parts for free test grinding and our recommendations.

Send for your free copies of "Work Done on the Blanchard", fourth edition, and "Art of Blanchard Surface Grinding".

PUT IT ON THE BLANCHARD

THE BLANCHARD MACHINE COMPANY

64 STATE ST., CAMBRIDGE 39, MASS., U.S.A.

GET G.S. TECHNICAL DATA *Free!*

See where and how we mass-manufacture Small Gearing to uniformly fine tolerances. Folder contains 23 pictures of Small Gears, plant views, as well as Diametral and Circular Pitch Tables. Ask for your copy on company stationery, please!

Are You HAUNTED by Excessive Rejects?

SPECIFY G.S. GEARING . .

Even if the horrid reject spectre isn't breathing hot down your back, you'll relax *more*, with G.S. GEARING! For, it's *everlasting* G.S. *accuracy* that counts. One part or a million . . every detail testing to a degree of uniformity long considered impossible in the mass production of Small Gearing. ★ GEAR SPECIALTIES is *everything* this name implies . . SPECIALISTS . . a big, fast-growing organization, with men, methods and machines, developed over 38 years, devoted to making *much better* Small Gearing exclusively! Will you join with us now, in a business relationship which is sure to grow more valuable to you with each succeeding year? Abandon your Small Gear problems on our doorstep. They'll never haunt you again!

FRACTIONAL HORSEPOWER GS

GEAR

Specialties, Inc.

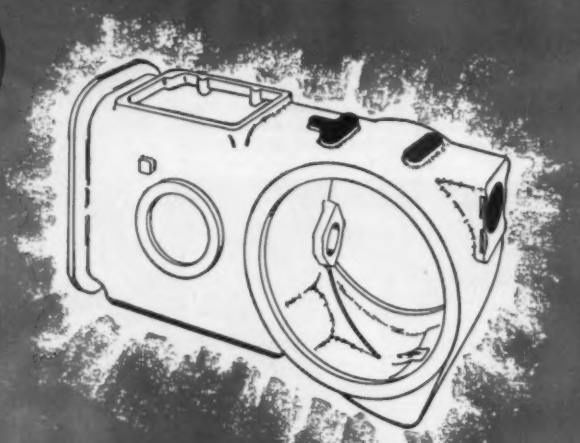
2635 WEST MEDILL AVENUE
CHICAGO 47, ILLINOIS

SPURS • SPIRALS • HELICALS • BEVELS • INTERNALS
WORM GEARING • RACKS • THREAD GRINDING

WORLD'S LARGEST EXCLUSIVE MANUFACTURERS OF FRACTIONAL HORSEPOWER GEARING

CUSTOMER SPECIFIED

Leading farm machinery manufacturer asked Kearney & Trecker to design a machine that would bring new efficiency to the milling and boring of large tractor housings.

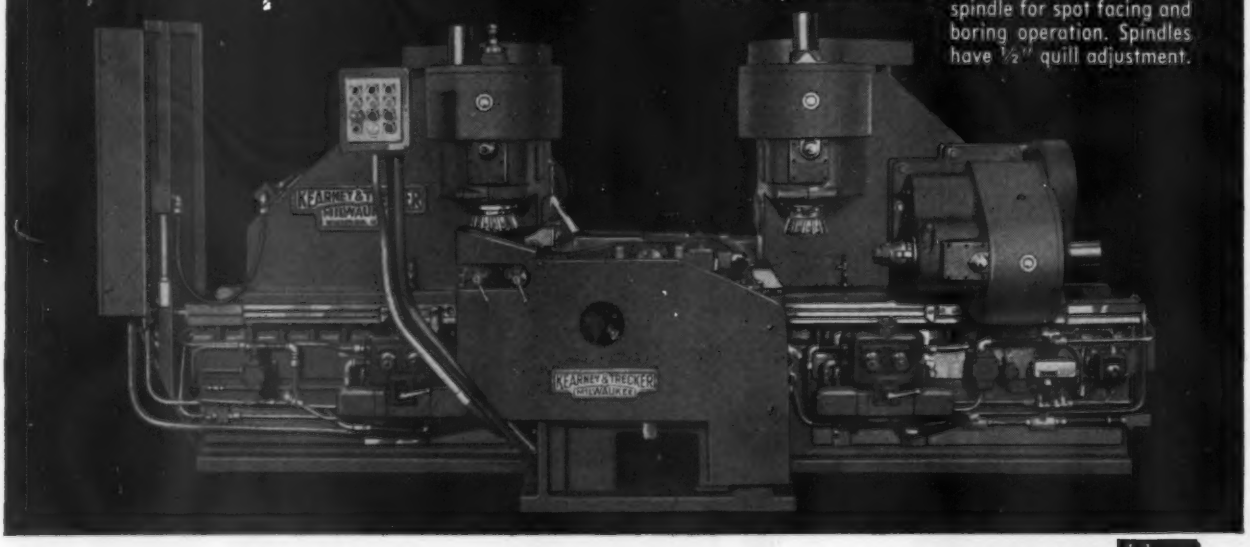


Black indicates machined surfaces.

KEARNEY & TRECKER DESIGNED

Kearney & Trecker built this special two-way boring and milling machine which simultaneously performs four operations on the tractor housing. Close tolerances were necessary not only in size but also in squareness of finished piece.

Left hand traveling head has two spindles—a horizontal for milling side flange and a vertical for milling top flange. Right hand traveling head incorporates a single spindle for spot facing and boring operation. Spindles have ½" quill adjustment.



New production efficiency starts with Kearney & Trecker Milwaukee machine tools

This typical example proves you can reduce costs and start on the road to higher production with machines designed and built by Kearney & Trecker's Special Machinery Division. With more than 50 years' experience in machine design and manufacture, Kearney & Trecker has all the ingenuity and skill required to solve special machining and production problems.

Why don't you take advantage of our abilities? They can pay off in profits for you. Your Kearney & Trecker Special Machinery Division representative will be pleased to give you all details. Call him today!

For more details on the machine illustrated ask for Data Sheet No. 1015. The free booklet "Doorway to a proven method for solution of big and small metalworking problems" is also yours for the asking.

Builders of Precision and Production Machine Tools Since 1898

Economical . . . clean . . . easy to apply—Stuart's *New* Excelene Grinding and Polishing Oils improve surface finish and increase belt life production as much as 50 to 100% on many abrasive belt grinding and polishing operations. Two types of Excelene, FD for ferrous metals, and NF for non-ferrous metals, are available from your abrasive belt distributor in easy-to-use 12 oz. pressurized cans.

It's easy to *spray production* on your abrasive belts with Excelene. Here are two examples:

A jet engine parts manufacturer obtained 275 pieces per belt polishing type 403 stainless steel dry. Excelene FD Polishing Oil increased belt life to more than 600 pieces each.

An aluminum cooking utensils manufacturer was getting 75 pieces per belt with grease stick lubrication—and using four gallons of solvent per operator each day to clean the belts. Excelene NF Polishing Oil not only kept the belt clean but increased belt life to 135 pieces each.

Call your abrasive belt distributor today—or fill out the coupon at right.

More than a "Coolant" is Needed

D. A. Stuart Oil co.
EST 1865 LIMITED

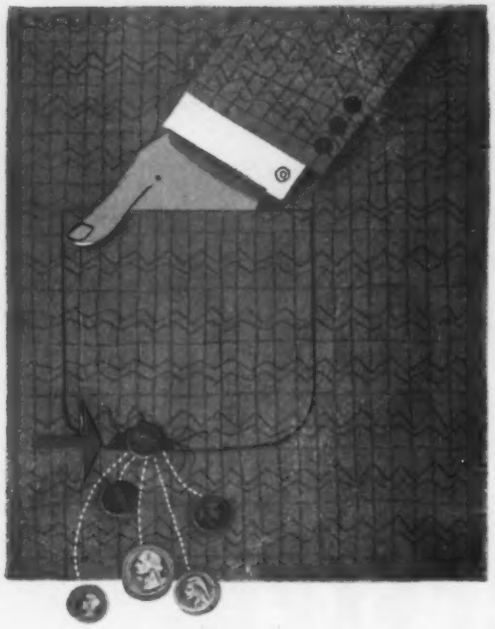
For further information on
STUART'S EXCELENE

Clip to your company letterhead and mail to:
D. A. Stuart Oil Co., 2729 S. Troy St., Chicago 23, Ill.

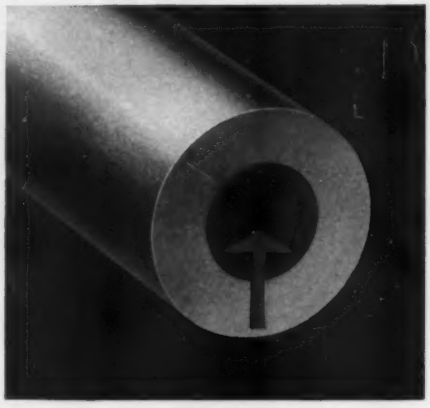
Name_____

Title_____

Name of your Belt Distributor_____



a hole here costs money...



a hole here saves money

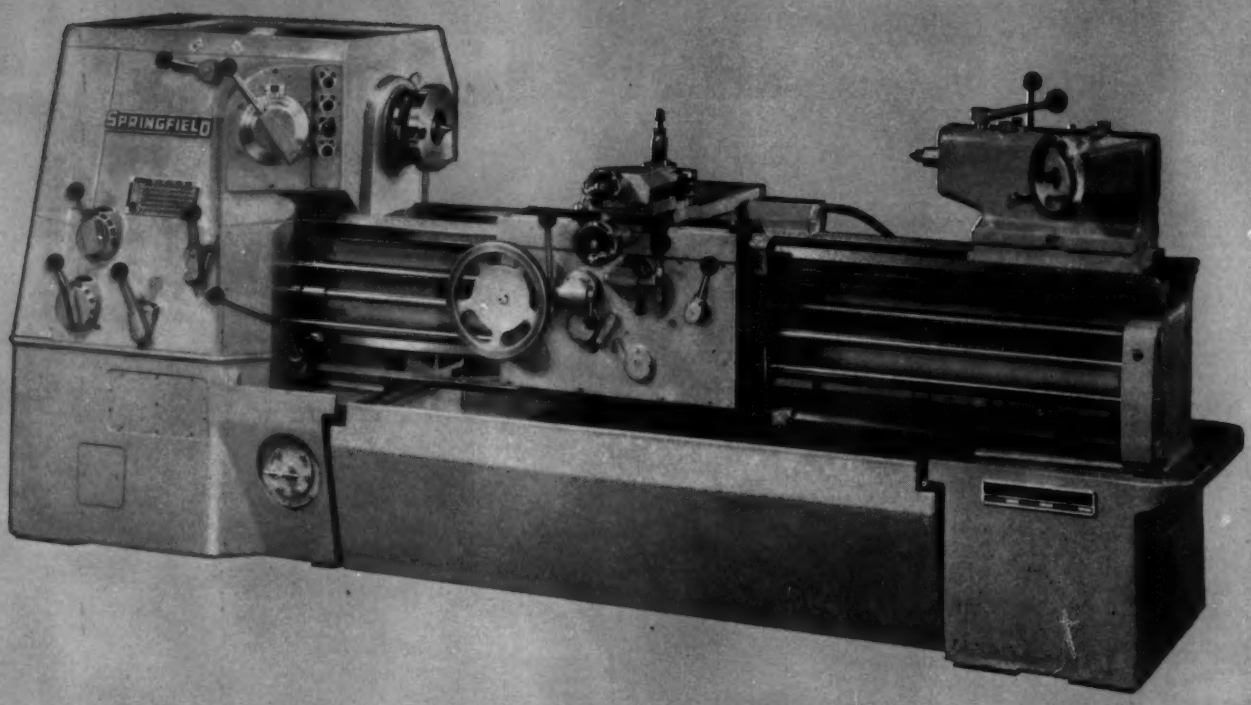
Crucible Hollow Tool Steel Bars put savings into the pockets of the metalworking industry. There's no need for costly drilling, boring, cutting-off or rough-facing operations. For the hole is already in the steel you buy. You save production time, machine capacity—avoid scrap losses.

Crucible Hollow Tool Steel Bars are now available in any of our famous tool steel grades . . . in almost any combination of O.D. and I.D. sizes. And you get *immediate* delivery of five popular grades — KETOS oil-hardening, SANDERSON water-hardening, AIRDI 150 high-carbon high-chromium, AIRKOOL air-hardening, and NU DIE V hot-work tool steels.

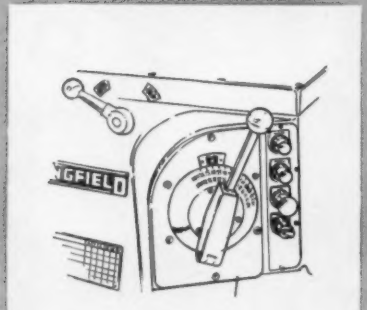
Your Crucible representative can show you how to save time and money with Crucible Hollow Tool Steel Bars. *Crucible Steel Company of America, Oliver Building, Pittsburgh 30, Pa.*

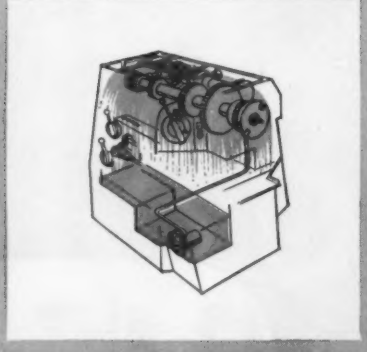
CRUCIBLE **first name in special purpose steels**

Crucible Steel Company of America



because it's simple





It does more work. Operators produce more with less fatigue because of Springfield's simple, responsive, easy-to-reach controls. *It runs cooler.* Continuous oil-mist lubrication carries heat away; cooler head minimizes distortion, maximizes accuracy. *It saves power, cuts wear.* Only the gears necessary for the selected speed are engaged; other gears run free. *It makes maintenance easy.* Clean design cuts maintenance time, promotes better shop practices.

Engine and toolroom lathes: swings 14″ to 32″.

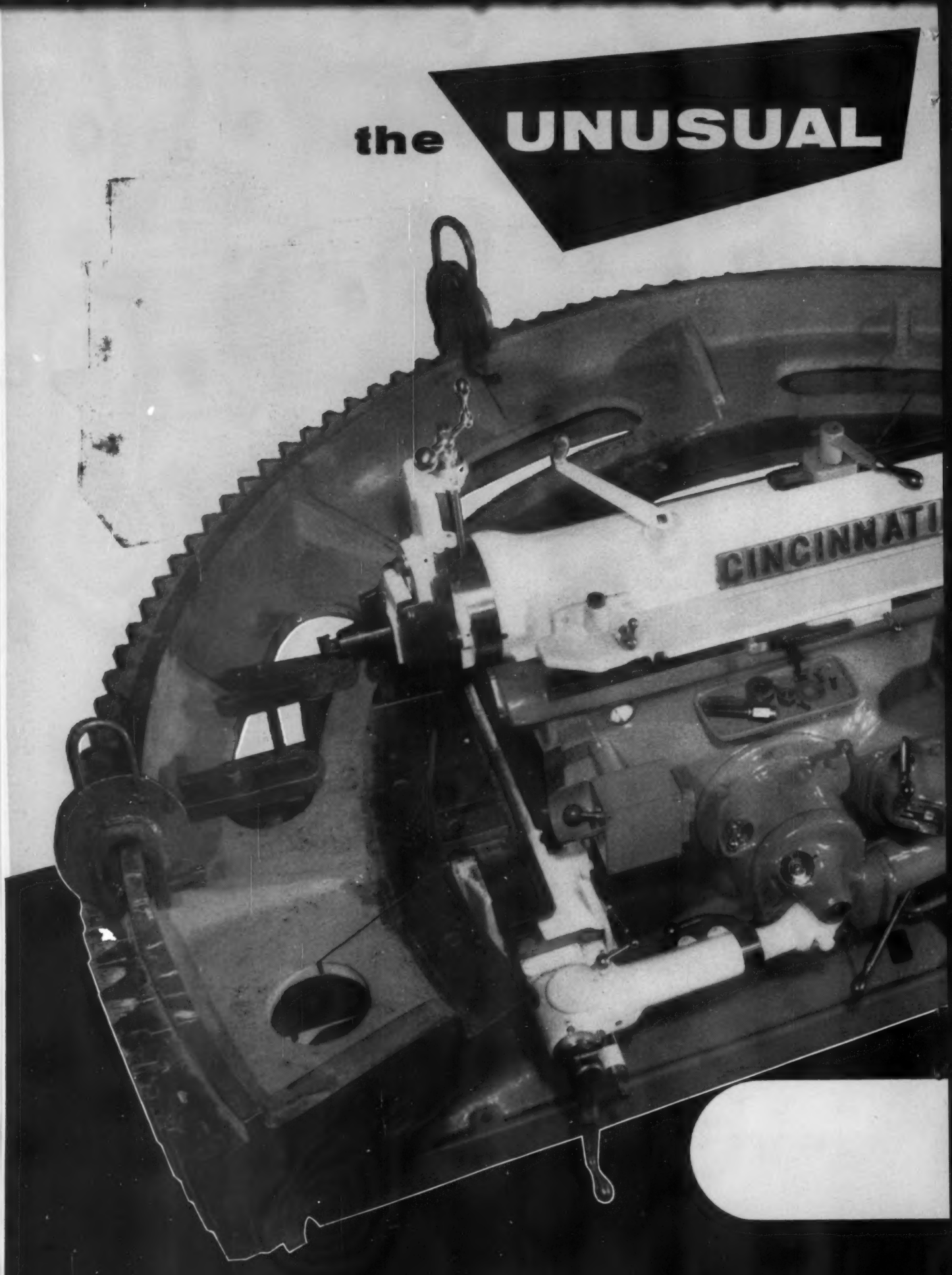
Contouring and reproducing lathes: swings 14″ to 32″.

Universal vertical grinders: swings 21″ to 52″. Write for the name of your Springfield dealer.

THE SPRINGFIELD MACHINE TOOL CO., SPRINGFIELD, OHIO

SPRINGFIELD

the UNUSUAL



is NORMAL for CINCINNATI SHAPERS

Stress relieving this massive gear required unusual rigidity of table and cross slide, and accurate starting and stopping of the shaper.

Some money making Cincinnati features:

- Electro-Magnetic Clutch and Brake.
- 50 P.S.I. automatic lubrication.
- Full control of all machine functions at operator's position.
- Solid, extended ram ways and many other features.

Write for Catalog N-6.

Photos courtesy Couer d'Alene Hardware & Foundry Company, Wallace, Idaho.

THE CINCINNATI SHAPER CO.

CINCINNATI 25, OHIO, U.S.A. SHAPERS • SHEARS • BRAKES

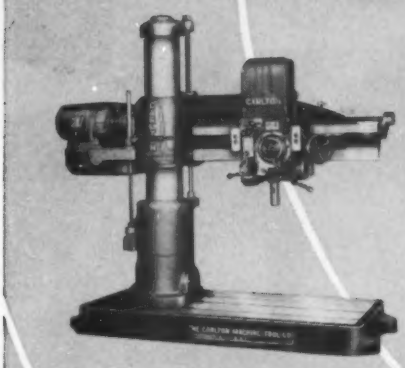
CINCINNATI

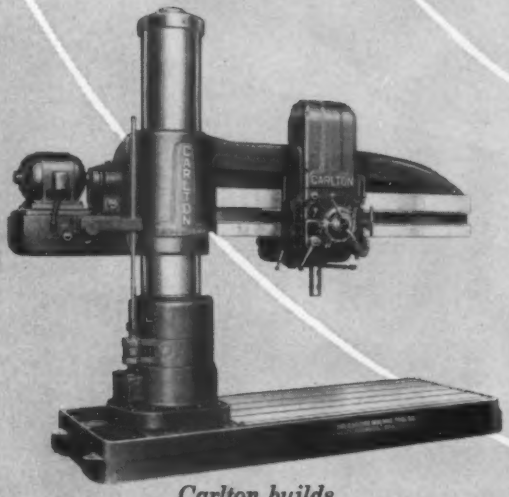
Only **ONE** *can be called the finest.....*

Carlton

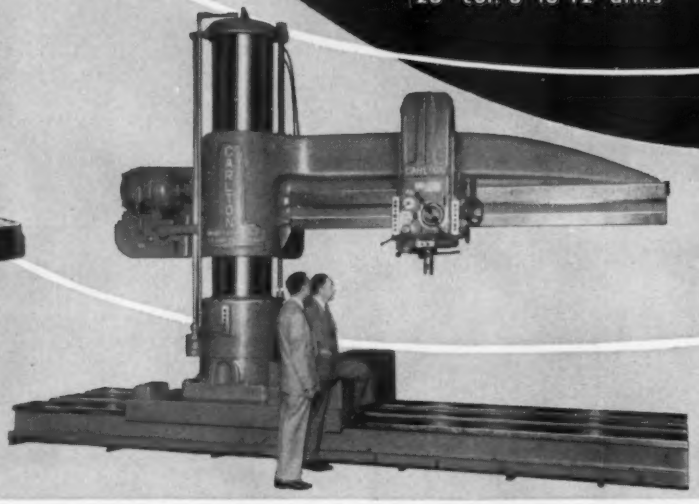
Radial Drills

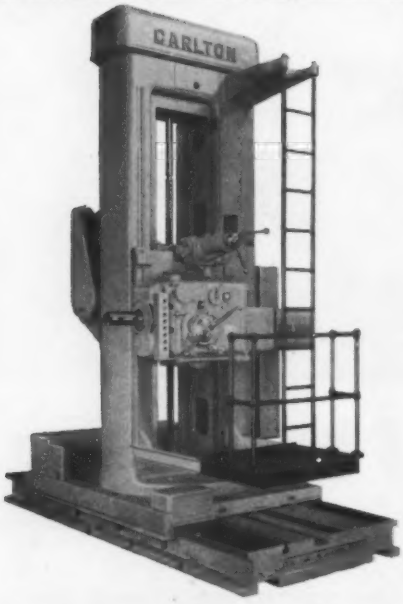
Model No.	Size
0A	9" col. 3'-4' arms
1A	9" col. 3'-4' arms 11" col. 3'-4'-5' arms
3A	13" col. 4'-5' arms 15" col. 4'-5'-6' arms 17" col. 5'-6'-7' arms
4A	19" col. 6'-7'-8' arms
5A	22" col. 7' to 10' arms 26" col. 8' to 12' arms





Carlton builds a complete range of sizes for all requirements





Carlton Horizontal Drills

	4H	5H
Vertical travel of headstock on column (max.)	96"	144"
Horizontal travel of column saddle on bed plate	to suit individual requirements	
Travel of spindle in head	30"	30"
Distance floor to spindle (min.)	35"	36"
Distance floor to spindle (max.)	11'	15'
Spindle speeds, number	36	36
Spindle speeds, range, rpm	10 to 1000	
Motor recommended, hp	7½,10, 15	15,30

THE CARLTON MACHINE TOOL CO.

Cincinnati 25, Ohio, U.S.A.

these thread rolling production pictures*

would look good in any shop!

Report from Plant #1

"This shop has been rolling 3/8"-16 threads continuously for two months – at 2000 rpm. Still on first set of rolls. 350,000 pieces to date."

Report from Plant #2

"Have three machines rolling 7/16"-20 threads on C-1114 steel studs – 'Close to a million' so far – and rolls have not been turned around"*

(*Thread Rolls are reversible, having a lead of 1⅓ to 1¾ threads on both sides.)

***Taken from two recent National Acme sales reports. More information on request.*

These two reports show that National Acme (Fette Patent) SELF-OPENING Thread Rolling Heads come mighty close to being the answer to a production engineer's prayer for a steady, day-in, day-out flow of threaded pieces into the pan.

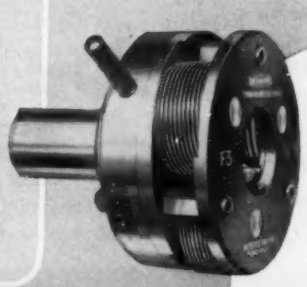
And when you consider that these thread rolling heads give you *better* threads—with smoother, more wear resistant surfaces, and with no cratering at the crest—aren't you missing a bet if *you* don't put them to the test on your threading jobs?

Wherever the work calls for threading machined parts from the end, there's no faster, better way than to "roll-em-on" with a National Acme (Fette) self opening head.

We'll be glad (and we think you will be too) if you ask us to prove that statement. Send sample or blueprint for our recommendation—or ask our representative to call.

May we send you a copy of Catalog FRH-53A ?

National Acme (Fette) Thread Rolling Heads are used on automatics, turret or hand lathes, threading machines, drill presses — and other types of vertical or horizontal machines. Basically, they are SELF-OPENING heads which operate like a die head, except that threading rolls are used instead of chasers. And they OPERATE AT HIGH-SPEED-STEEL TURNING TOOL SPEEDS. Made in Revolving Type (capacities 7/16" to 1") and in Non-revolving Type (capacities 1/16" to 3/4").



THE NATIONAL ACME COMPANY

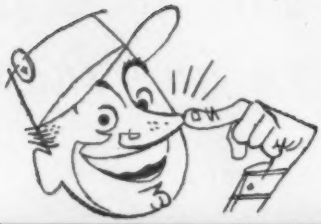
171 EAST 131st STREET • CLEVELAND 8, OHIO.

Call

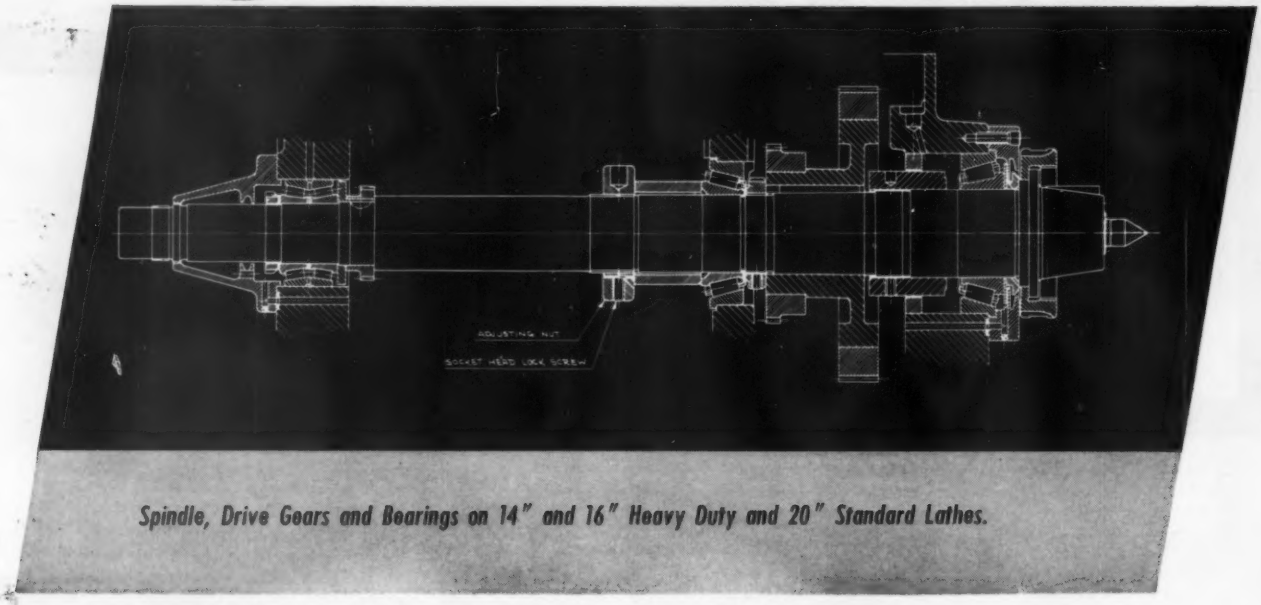
FOR A BETTER DRIVE

...Lodge & Shipley puts it

"ON THE NOSE"



...Locating drive gears and main bearings near spindle nose, drive gears rigidly keyed to spindle for maximum strength — power — accuracy.

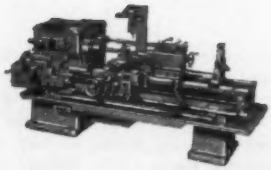


Spindle, Drive Gears and Bearings on 14" and 16" Heavy Duty and 20" Standard Lathes.

Location of driving force and bearings close to the load is a proven advantage in power transmission. Lodge & Shipley drive gears and main bearings are literally "on the nose," grouped at the forward end of the spindle just inside the headstock.

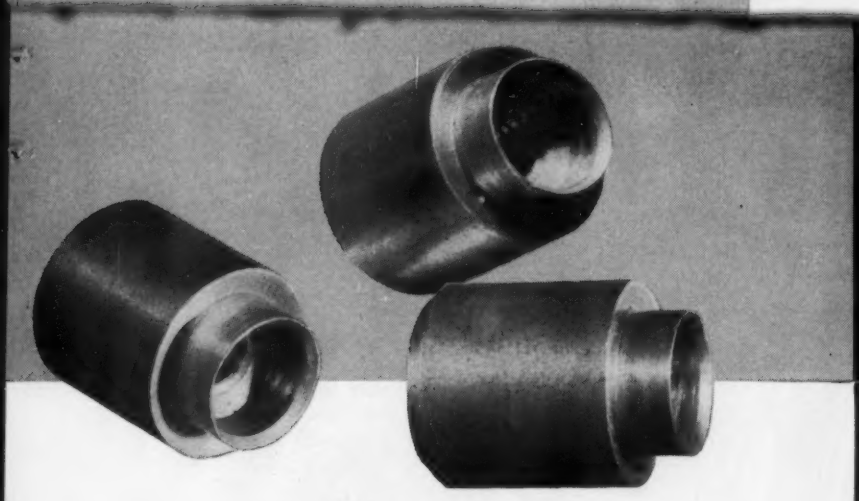
Giving extra ruggedness and power, this detail is an example of the design skill that goes into every part of the Lodge & Shipley Lathe. The result, proved by thousands of users, is a lathe that gives more in production and accuracy—costs less in operation.

For your next lathe, consider a Lodge & Shipley. A representative will welcome the chance to compare a Lodge & Shipley . . . point by point . . . with any other lathe. Request Bulletin No. 200 which describes and explains the many features. The Lodge & Shipley Co., 3055 Colerain Ave., Cincinnati 25, Ohio.



Lodge & Shipley

....your **LODGE**-*ical choice!*



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U. S. STEEL SUPPLY for ALL your steel needs...

- Structural Shapes
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- Bars, Hot and Cold Finished
- Sheets and Strip
- Alloy Steels
- Stainless Steels
- Tubular Products
- High Strength Steels
- Aluminum
- Industrial Supplies and Machinery
- Reinforcing Bars, Wire Fabric
- Floor Plates, Industrial Flooring

SEE The United States Steel Hour. It's a full-hour TV program presented every other week by United States Steel. Consult your local newspaper for time and station.

When it comes to profitable machining . . .

why pay *more* when you can get all the speed you need with USS "MX" Screw Stock

Before you order screw stock for your next operation, you ought to make a simple check that could easily result in substantial savings. You are very apt to find that you needn't spend a lot of extra money buying high cost screw stock when you can get all the machining speed you need by using USS "MX" Free-machining Screw Stock. "MX" costs no more than B1113, yet its S.F.M. can be far greater. In addition, it prolongs tool life and gives better parts finish.

How one manufacturer saved money with USS "MX"

A glance at the figures below shows how one manufacturer—who tested the three types—lowered his production cost per 1000 pieces with "MX." The expensive stock gave slightly higher S.F.M. than "MX," *but* the lower cost of the "MX" itself and its plenty-fast-enough S.F.M. resulted in the lowest cost per *1000*. And that, of course, is the most important consideration.

⅝" closed end drum nut

	B1113	USS "MX" OH	High Cost Stock
Steel cost	$7.55	$7.55	$8.10
Fixed costs	$2.45	$2.45	$2.45
Machine time cost	$3.12	$2.86	$2.72
COST PER 1000	$13.12	$12.86	$13.27
S.F.M.	281	385	421

Very likely similar savings can be yours. Call your nearby U.S. Steel Supply warehouse and one of our engineers can show you exactly how much you can save with "MX." In addition to "MX" our stocks include: cold finished bars, alloy bars, stainless bars, mechanical tubing, aluminum bars.

Free . . . Our latest Stock List

Contains everything you'll want to know about our huge stocks—including USS "MX" Screw Stock. Tells what's actually in stock at our warehouse nearest you. All data is specific, complete, accurate—and easy to find. Send the coupon today for this big, all-new Stock List.

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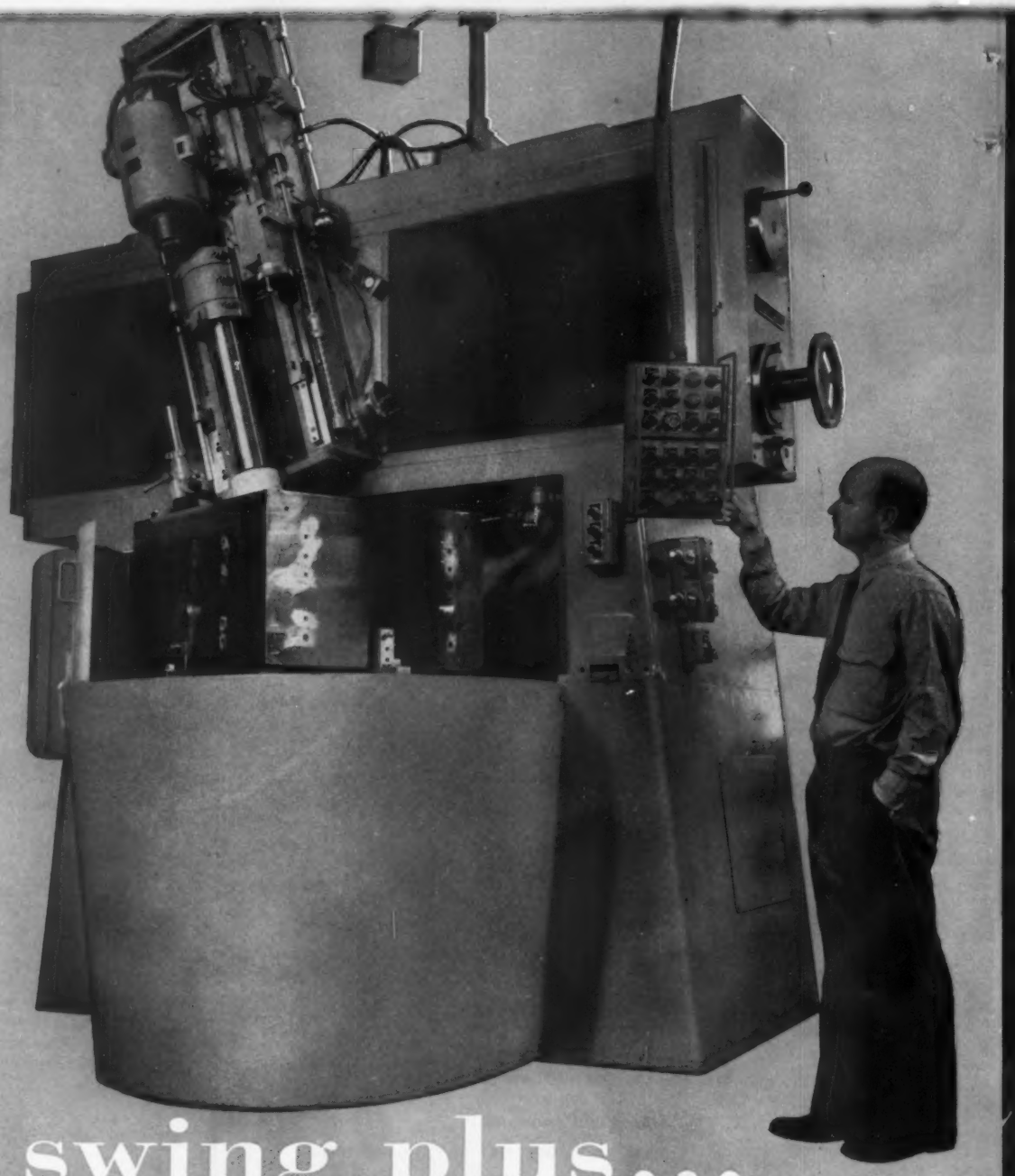
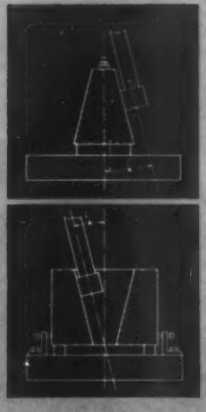


52″ swing plus...



. . . plus 27½″ grinding head stroke, 24¾″ clearance over face plate, 42″ diameter face plate—on Springfield's new Vertical Universal Grinder. Work piece on the grinder here is a washing machine agitator mold, 43″ corner to corner. One angle setting of the head ground both male and female taper for a perfect fit. Hand-lapping them would take a week. Springfield's time: 4½ hours.

Other Springfield Vertical Universal Grinders—swings 21″ and 30″. Lathes—toolroom, engine, contouring, reproducing—14″ to 32″. Write for the name of your nearest Springfield dealer.

THE SPRINGFIELD MACHINE TOOL CO., SPRINGFIELD, OHIO

SPRINGFIELD

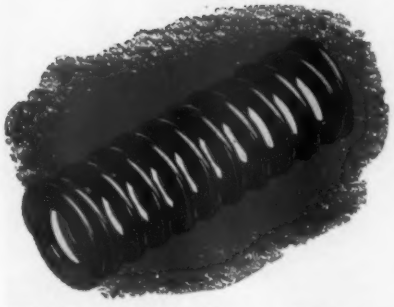
City ..... State.....

We asked hundreds of tool and die makers...

"What's wrong with the die springs you now use?"

Their answers sparked DIECO's metallurgical and design research... led to a complete new line that

out-performs others up to 3 to 1

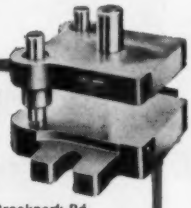


Working with leading spring specialists, Dieco engineers developed a complete new line of die springs which have licked the toughest spring problems.

Special steels were developed... special methods for treating them ... even special packaging methods to eliminate "growth" in transit.

Out of this field research and development came a line of more than 500 standard-size springs, in three distinct pressure classifications: Medium, Medium-High and High. For the first time, it became possible to "fit" the spring to the job at hand, to pick the precise pressure required for a given die action.

Now, satisfied users report that Dieco springs virtually eliminate downtime and wasted man hours due to die spring failure. If you have a tricky spring problem tying up your pressroom, call your local Dieco representative. He will be glad to help you pick the proper spring for the job. And to put an end to spring problems before they start... specify DIECO die sets and die springs.



Call your local DIECO office TODAY!

CLEVELAND	1400 Brookpark Rd., SHadyside 1-9000
PITTSBURGH	122 S. Sheridan Ave., EMerson 1-0440
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BUFFALO	440 Terrace Blvd. Depew, N. Y. REgent 6767-8
ST. LOUIS	Scott Special Tools, Inc., 1252 N. Kingshighway, FOrest 3454
DETROIT	20201 Sherwood Avenue FOrrest 6-2480

Write for Catalog No. 6-A

BLISS SINCE 1857

Industry's most complete line of die sets and die makers supplies

The DIE SUPPLY Company

DIECO

1400 Brookpark Road, Cleveland, Ohio
a subsidiary of E. W. BLISS COMPANY

DIE SETS • GUIDE PINS

BUSHINGS • SPRINGS • SOCKET HEAD SCREWS • 5001 ITEMS

ROCKFORD *Hy-Draulic* SLOTTERS

equipped with

Kopy-Kat

duplicators

Cutting cam from tool-room-made master.

1. Tool Room Made Master

2. Functional Cam

3. Finished Die

Cutting new mold from functional cam.

Cut Dies Fast, Accurately, Economically

This manufacturer wished to duplicate blanking dies fast, accurately and inexpensively. A standard Hydraulic Slotter, equipped with a Kopy-Kat Duplicator, was used and this is how the job was done:

The tool-room-made master is placed on the Slotter. From it, the duplicator develops the functional cam. This cam is an enlarged projection of the die, in reverse, and is followed by the duplicator stylus in producing the finished dies. Sketches show the sequence of operations as performed.

Kopy-Kat equipped Hydraulic Slotters are readily adaptable to an almost endless variety of internal and external contour machining problems. A Rockford Machine Tool Co. representative can give you further details of the special advantages of the versatile Kopy-Kat Duplicator and how it may simplify your form machining work.

Hy-Draulic
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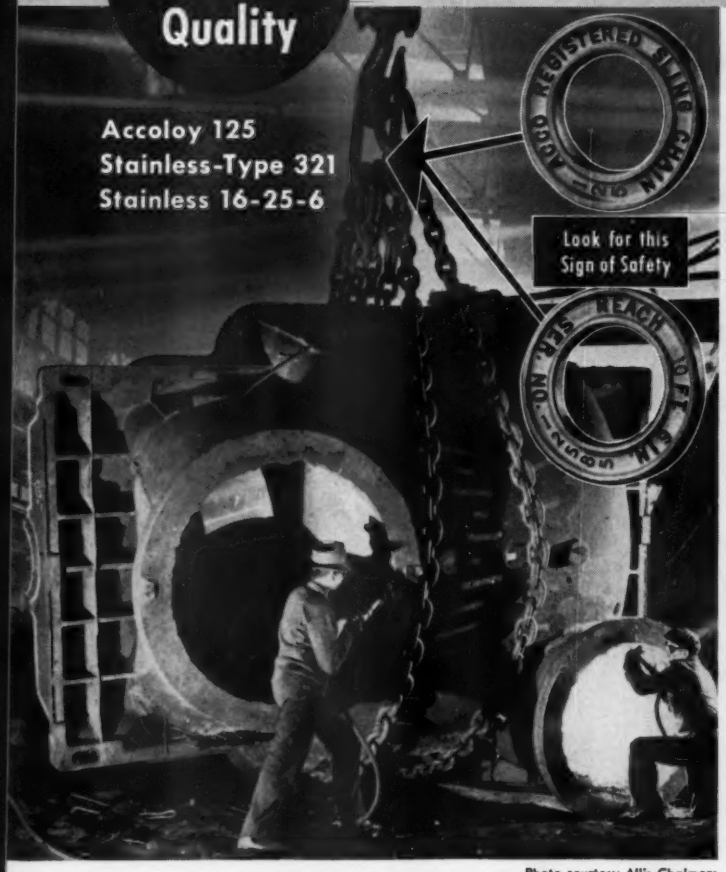
ROCKFORD MACHINE TOOL CO.
2500 KISHWAUKEE STREET • ROCKFORD, ILLINOIS

ACCO Quality

Registered* Slings—Chain, Wire Rope

THE STANDARD OF EFFICIENCY AND SAFETY



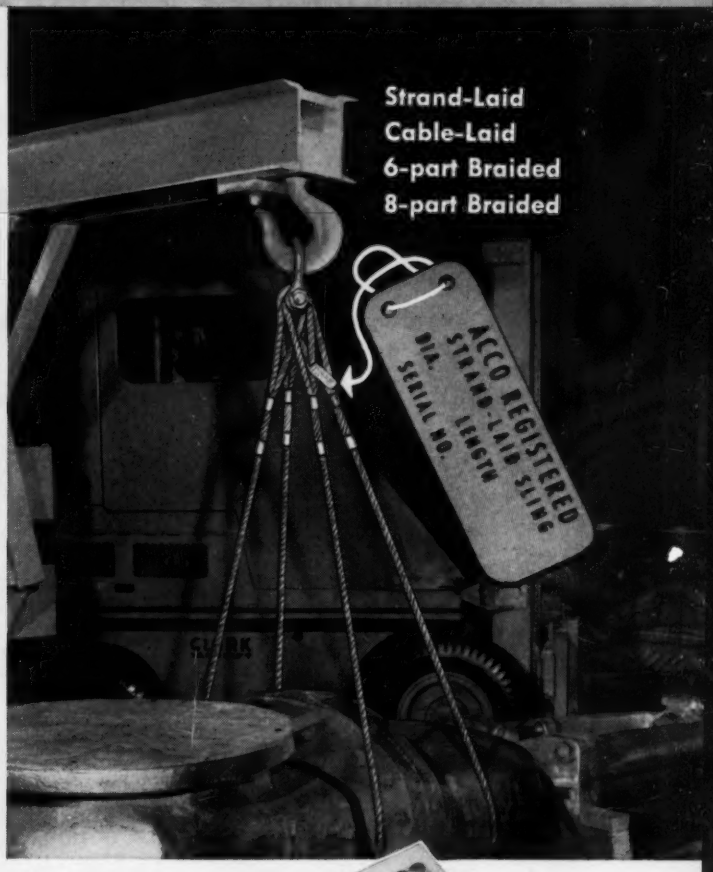


Photo courtesy Allis-Chalmers

See what ACCO Registered* means to you!..

- It means greater safety for men, machines and loads carried in the air in shops. "ACCO *Registered*" means greater efficiency because of better overall designs of slings and attachments. It means lower sling service costs because all parts of each individual ACCO *Registered* Sling are engineered to equal working strengths.

And ACCO *Registered* means that each completed sling has been proof-tested at the factory. It is your assurance of the finest quality chain or wire rope slings that money can buy.

*Trade Mark Registered

1. The best material
2. Unit safety factor (on bodies, rings, links, hooks)
3. Proof test of each completed sling
4. Actual field service test of each design
5. Metal identification ring or tag on each sling
6. Signed Registry Certificate with each sling

ACCO makes both chain and wire rope slings

ACCO can advise impartially on the merits of chain or wire rope slings, or a combination of both, for each lifting job. It will pay you to see ACCO about slings.

Write our York, Pa., or Wilkes-Barre, Pa., office for helpful literature

ACCO

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Atlanta, Boston, Chicago, Denver, Detroit, Houston, Los Angeles, New York, Odessa, Tex., Philadelphia, Pittsburgh, Portland, Ore., San Francisco, Wilkes-Barre, Pa., York, Pa., Bridgeport, Conn.
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for Better Value

ATRAX | IN ACTION

RECORDS SHOW 500% INCREASE IN PRODUCTION WITH IMPROVED BORING TOOL BIT

A CASE HISTORY: One of our customers had experienced considerable difficulties in boring tapered holes in stainless steel. The specifications called for extremely close diameter and taper tolerances, and a finish requirement of ten micro-inch. The carbide tool previously used gave the customer a production of one piece part, containing eight holes, per eight-hour day. With the new Atrax superior finish ground boring bit, production increased to about five piece parts per day. One tool bit roughed out and finished eight holes before resharpening was necessary, and the finished product was eight micro-inch or better. Atrax Solid Carbide Tool Bits improved production in this instance by over 500%.

Possibly our engineers or sales representatives can help YOU achieve similar savings. You'll find them in all principal cities, ready to consult without any obligation.

NEW! Complete 88-page Manual and Catalog of Carbide Tools. Write for your free copy.

THE ATRAX COMPANY NEWINGTON 11, CONNECTICUT

SPEED RECORD BROKEN

2,000 Horse Power Motor Shafts

ROUGH and FINISHED in

2¼ hrs.

Former Time
9 hours

Fairbanks, Morse & Co., Beloit, Wisconsin, is getting this amazing production day after day on its *20 inch "AMERICAN" All-hydraulic Duplicating Lathe.*

These shafts are made from 7½" diameter by 84" long hot rolled stock weighing 1059 pounds. A 30 horse power roughing cut and 15 to 20 horse power finishing cut completes the operation.

Note particularly that a finish turned motor shaft is used for a template, showing the rugged stability of "AMERICAN" Template Supports.

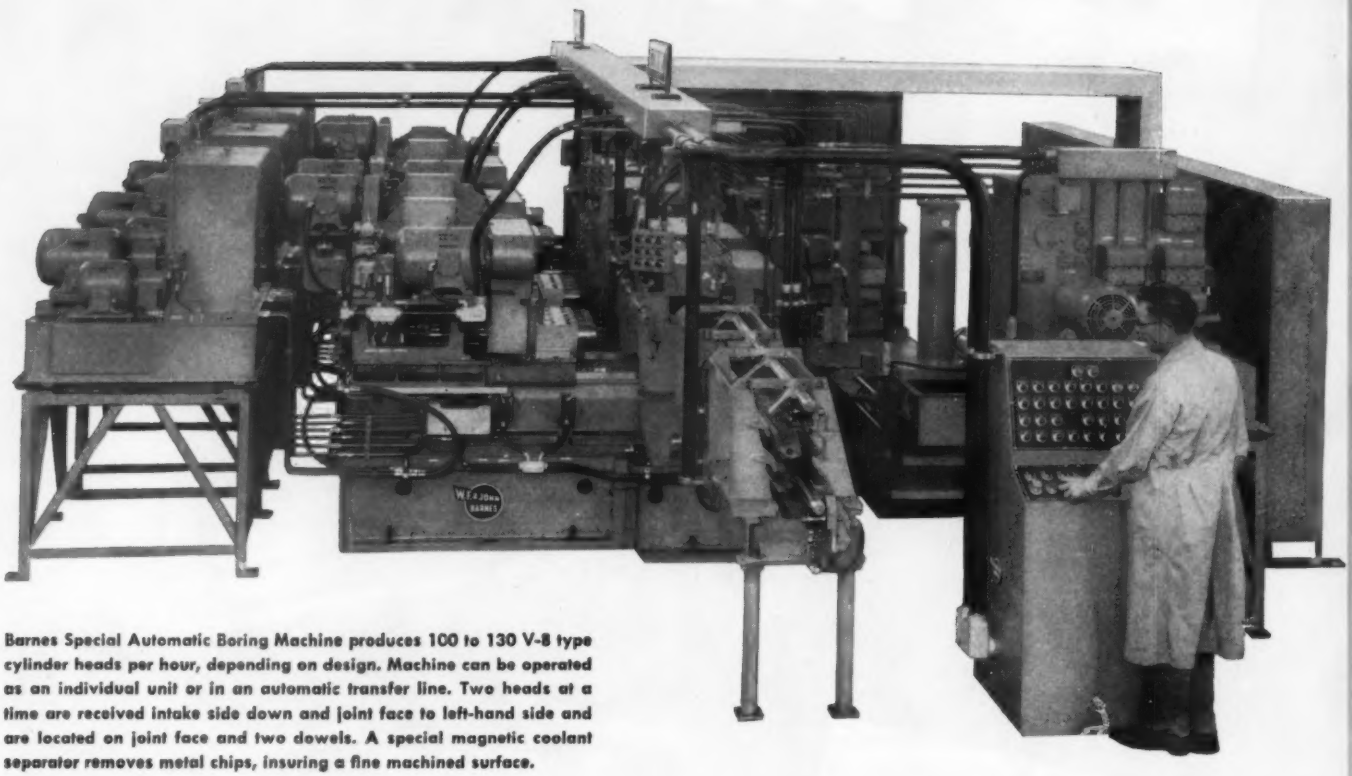
The quality of Fairbanks-Morse's products are universally recognized. We are proud indeed that so many "AMERICAN" Lathes and Radial Drills contribute to them. "AMERICAN" Hydraulic Duplicating Lathes hold many production records for work of this nature. Let us show you what they will do on your work.

Send for Bulletin No. 35.

THE AMERICAN TOOL WORKS CO. Cincinnati 2, Ohio, U. S. A.

LATHES AND RADIAL DRILLS

Announcing NEW MACHINING AUTOMOTIVE



Barnes Special Automatic Boring Machine produces 100 to 130 V-8 type cylinder heads per hour, depending on design. Machine can be operated as an individual unit or in an automatic transfer line. Two heads at a time are received intake side down and joint face to left-hand side and are located on joint face and two dowels. A special magnetic coolant separator removes metal chips, insuring a fine machined surface.

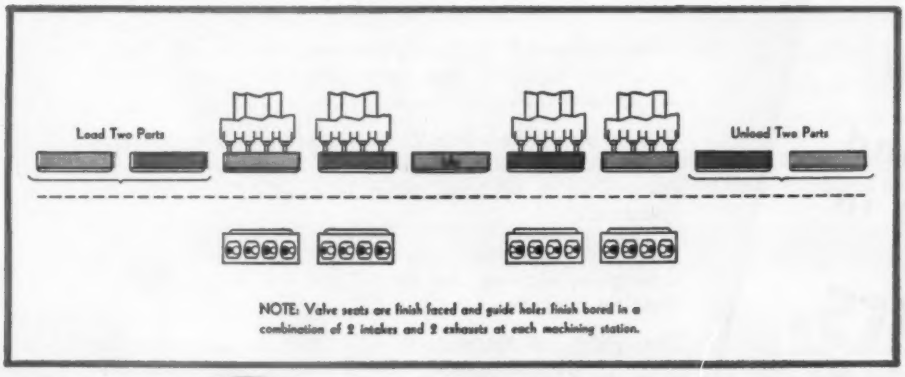
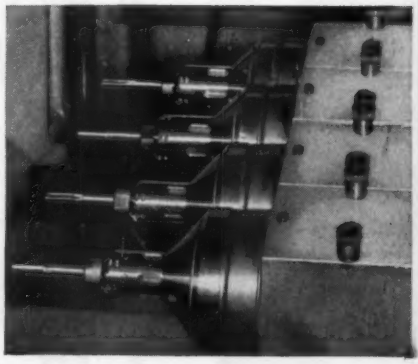

Load Two Parts
Unload Two Parts
NOTE: Valve seats are finish faced and guide holes finish bored in a combination of 2 intakes and 2 exhausts at each machining station.

Diagram above illustrates how heads are transferred two at a time and machining operations arranged to meet high output requirements. For lower production, machines are designed with fewer machining stations and one-station transfer unit.



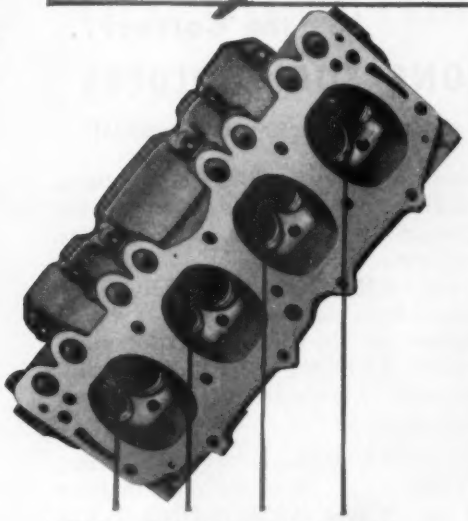
Closeup of 4-spindle head with special tools for machining four valve seats and stem holes in one pass. Second 4-spindle head completes remaining operations.

W. F. & JOHN BARNES

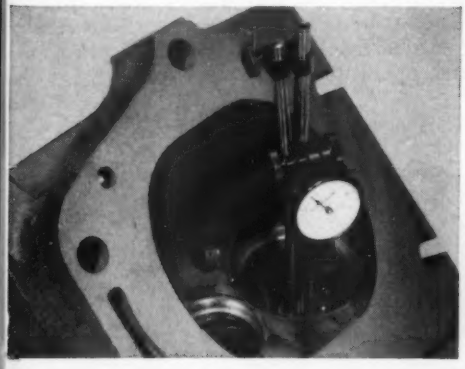
Builders of Better Machines Since 1872

MULTIPLE SPINDLE DRILLING • BORING • TAPPING

PRECISION METHOD OF FINISH VALVE SEATS AND STEM HOLES *Automatically*



Cylinder head for V-8 engine showing finish machined valve seats and guide holes. Red arrows indicate operations performed at first machining station.



Concentricity of valve seat and stem hole held to .0005" total indicator reading.

EXCLUSIVE W. F. & JOHN BARNES MACHINING DEVELOPMENT HOLDS TOTAL CONCENTRICITY WITHIN .0005"

Now, a new precision machining method developed exclusively by W. F. & John Barnes makes it possible for you to finish machine automotive valve seats and stem holes on a continuous automatic basis. You can now eliminate corrective operations after normal boring, reaming, and seating operations, because this new development holds total concentricity within .0005" (total indicator reading). This new machining process, as incorporated into Barnes Automatic Progress-Thru Type Machines, consists of multi-blade tooling for the valve seating operations, combined with modified gun drilling tools for precision boring valve guide holes. Production tests show the valve seat tools produce 10,000 to 15,000 parts, and the boring tools, between 2,500 and 4,000, before regrinding or replacement is necessary. The net result has increased production efficiency and improved product quality at lower cost. Write for more facts today.

TO SAVE TIME INVESTIGATE BARNES' 6-POINT MACHINE TOOL BUILDING SERVICE

For over 75 years, Barnes has designed and built special machinery. These years of experience can assist you in saving time and cutting costs. Check the advantages of an engineering and building service from one convenient source.

1. **SPECIALIZED MANUFACTURING FACILITIES**—75-year background, large well equipped plant efficiently tooled to build high production machines.
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3. **SPECIAL ELECTRICAL EQUIPMENT and CONTROLS** — individually designed and built for maximum safety and ease of control, with circuits that assure the most dependable coordination of all machine functions.
4. **SPECIAL GAUGES, FIXTURES, TOOLS**—designed for each individual machining problem, assure accuracy of operations at high production speeds.
5. **SPECIAL HANDLING AND CONVEYOR EQUIPMENT**—designed and built to reduce work handling, effect maximum safety and efficiency.
6. **COORDINATED DESIGN AND ENGINEERING**—Mechanical, Hydraulic, Electrical, Process, Tool, and Fixture Engineers work together at Barnes. Team-work solves complex problems quickly.

WRITE FOR FREE BOOKLET

Ask for free booklet "Coordinated Machine Engineering" describing the scope of Barnes machine tool building service.

W. F. & JOHN BARNES COMPANY
401 SOUTH WATER STREET, ROCKFORD, ILLINOIS

MACHINES • AUTOMATIC PROGRESS-THRU AND TRANSFER TYPE MACHINES

ARMSTRONG

Use the Correct...

ARMSTRONG TOOL HOLDERS

to increase pieces, production and profits!

Because they do their work so well, without repairs, maintenance or replacement . . . because they last for years and have become as much a part of everyday operations as steel itself, the importance of using the correct type and size ARMSTRONG TOOL HOLDER for each operation, is frequently overlooked. It should always be remembered that by controlling the cutting point, ARMSTRONG TOOLS control both the productivity and efficiency of every lathe, planer, slotter, and shaper in most shops.

Tools so vitally situated, no matter how trouble-free, deserve periodic checking . . . checking to see that the correct size and correct type ARMSTRONG TOOL HOLDER is being used for each operation: checking to be sure that you are taking full advantage of the newer additions to the Armstrong System—the special types for ARMIDE (Carbide Tipped) Cutters, others for ARMOLOY (Cast Alloy) Bits and Blades; the newer "spring" form threading tools and cutting-off, etc., etc.

Write for a recent ARMSTRONG Catalog and check your tooling of each operation.

ARMSTRONG BROS. TOOL CO.

"THE TOOL HOLDER PEOPLE"

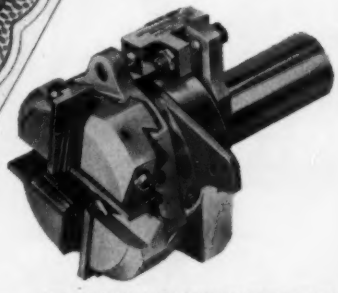
5215 W. ARMSTRONG AVE. **CHICAGO 30, ILL.**

Jones & Lamson dies are your best buy . . . whether you need Class III or not. They give you extra savings because of our system of "no approximation" . . . a factor that also applies to Class I and II. So, whatever your requirements, Jones & Lamson's *written* Class III or better Guarantee means -----

IMPORTANT SAVINGS regardless of tolerance requirements — NOT SOMETIMES—EVERY TIME!

TANGENT CHASER TYPES
Stationary and Revolving
Capacities from #4 to 2"

RADIAL CHASER TYPE
Capacities from
#8 to 4¼"



FOR BROWN & SHARPE AUTOMATICS and SMALL TURRET LATHES
Capacities from #0 to 1¼"

P.S. *J & L die heads also offer: low initial cost, ease of operation, controlled resharpening, use of carbide tipped chasers where applicable.*

JONES & LAMSON

Machine Tool Craftsmen Since 1835

JONES & LAMSON MACHINE CO., 502 Clinton St., Dept. 710, Springfield, Vt., U.S.A. J&L THREAD TOOL DIV.

"Maintenance costs small, operators like LeBlonds..."

machine tool builder Greaves

Lineup of LeBlond Lathes at Greaves: 17" Rapid Production (foreground), seven 17" Regals and a 15" Regal. Turn precision parts for milling machines on 24-hour schedule. Dependable, versatile, accurate, cost little to maintain.

tells why he uses LeBlond lathes

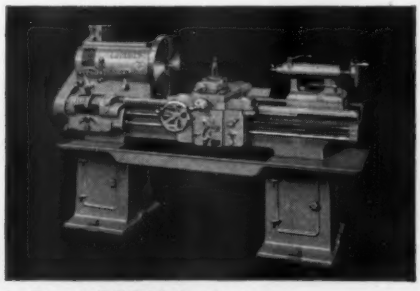
No one knows machine tools better than people who build them. And Greaves Machine Tool Company, Cincinnati, builder of milling machines, owns nine LeBlond Lathes! Eight Regals and a Rapid Production.

Since 1941, some of these lathes have worked almost 24 hours a day on full-schedule production for precision milling machine parts, woodworking machine parts and sub-contract work.

Bill Greaves himself says, "*Maintenance costs are extremely small, operators like working on their LeBlonds—because they're easy to operate, convenient, have a great deal of power for their size. Give long sustained accuracy, especially in boring and turning tapers*".

A machine tool man like Bill Greaves knows what he's looking for in a lathe. His opinion counts. When he says our lathes have what it takes, we feel it's a tribute of the highest order!

Check the variety of jobs these versatile lathes handle at Greaves. Sound like some of the parts production work in *your* shop? LeBlond Lathes can speed up jobs like these, keep your maintenance costs down to a bare minimum.

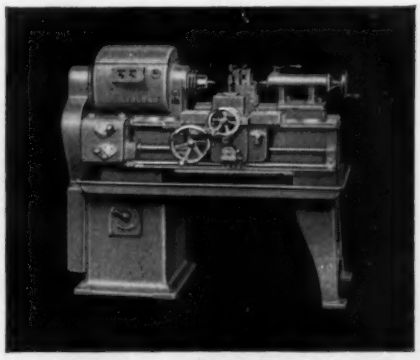


LeBlond REGAL Lathes

Light-duty lathes with heavy-duty features—ideal for production, job shop work and training. Geared headstock, quick change feed box, separate leadscrew and feed rod, taper key drive spindle nose, one-piece apron. Swings—13″, 15″, 17″, 19″, 21″, 24″, and 13″ bench model. 17″, 19″, 21″, 24″ Gap and 17″/28″ Sliding Bed Gap. Write for Bulletin R-A, stating sizes you are interested in.

Typical Jobs:

Bushings • Shafts • Armatures • Expansion arbors for mounting gears • Bevel gear blanks • Spindle for universal head • Sleeve gear blanks for Milling Machines • Tumbler for reverse drive • Formica gear blanks (laminated canvas-based gear material)



LeBlond RAPID PRODUCTION Lathes

Designed especially for low-cost high-production turning. Not a stripped-down engine lathe. Choice of headstocks gives you speeds within the range you choose. Swings—13″, 17″ and 20″. Write for Bulletin RP-A, stating sizes you are interested in.

THE R. K. LEBLOND MACHINE TOOL CO., CINCINNATI 8, OHIO

Your nearby LeBlond Distributor will give you all the facts. Call him soon, or write.

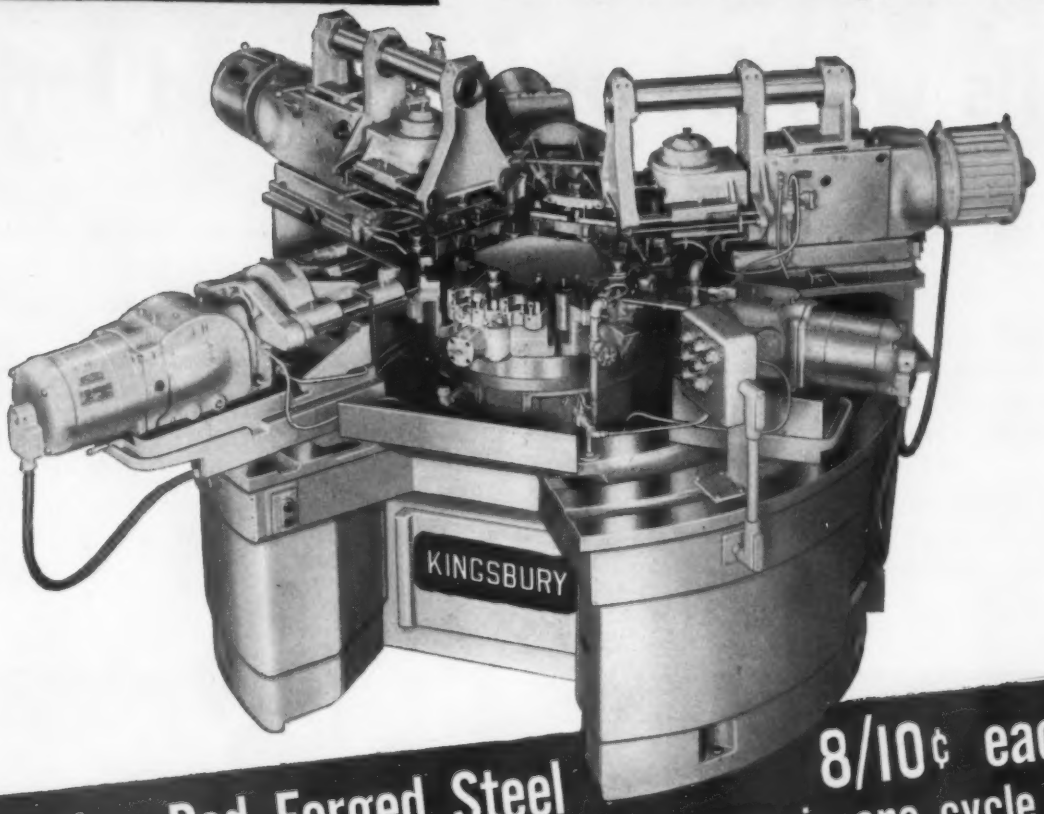
turned faster by

LeBLOND *of Cincinnati*

WORLD'S LARGEST BUILDER OF A COMPLETE LINE OF LATHES—FOR OVER 64 YEARS.

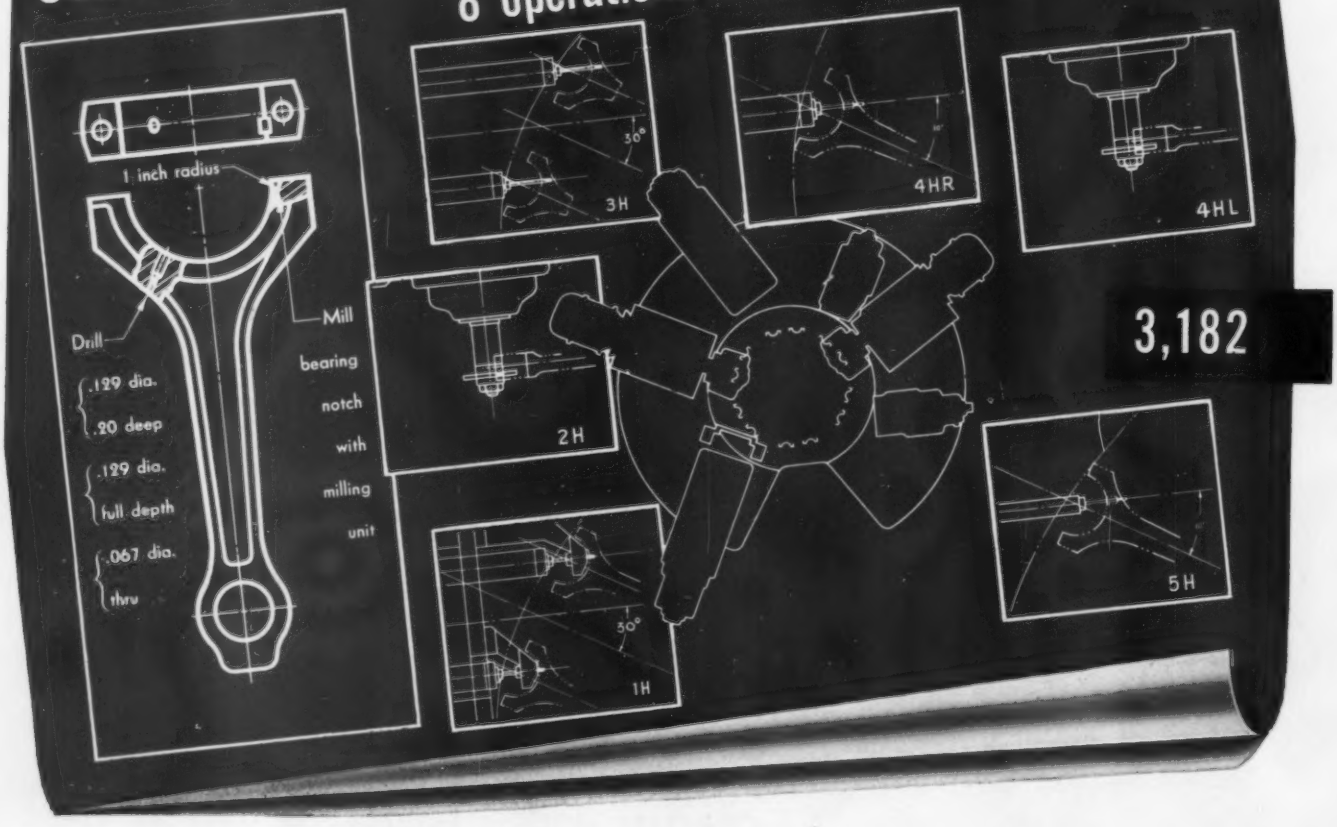
Lineup of LeBlond Lathes at Greaves: 17" Rapid Production (foreground), seven 17" Regals and a 15" Regal. Turn precision parts for milling machines on 24-hour schedule. Dependable, versatile, accurate, cost little to maintain.

"Operations Kingsbury" . . . required accuracy, low cost, high



Connecting Rod Forged Steel 8/10¢ each

8 operations on 2 parts in one cycle



production for interchangeability

Here are two Kingsburys, custom-built to serve in widely separated product fields. Each justifies its investment. One drills a small hole and mills a notch in a forged steel connecting rod. The other works on a cast aluminum sole plate for a steam iron: drills 26 holes and spot-faces a boss.

Could this work be done on single-operation machines? "Yes." But could the connecting rods be machined for eight-tenths of a cent each? And the sole plates for one-and-one-fifth cents each?

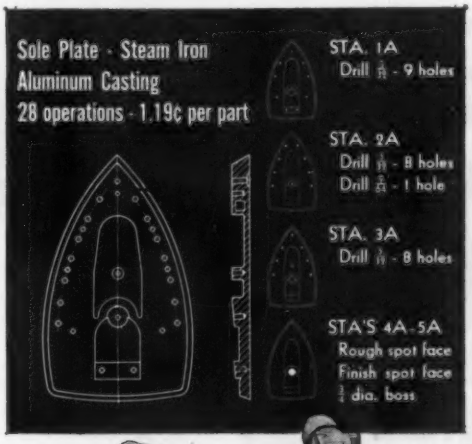
Kingsburys have so many advantages. For example: One work fixture positions the part for each successive operation. Standard units perform the operations within a pre-determined time cycle to obtain the best output with required accuracy. Tolerances are held to specifications. Scrap loss is reduced to a minimum. Floor space is saved. Handling is reduced. One operator loads and unloads the machine. And your parts will be interchangeable, reducing your assembly time.

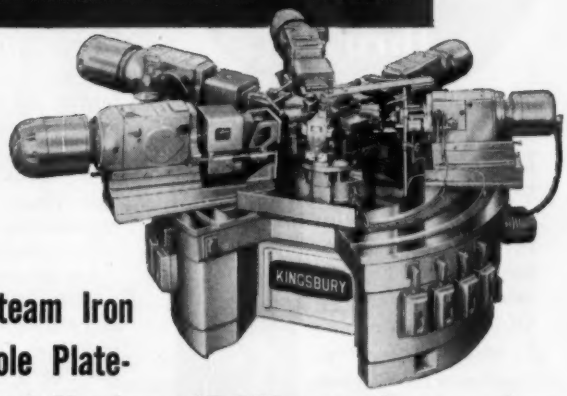
You can drill, spot drill, flat-bottom, ream, burr-ream, counterbore, countersink, mill, end-mill, hollow-mill, tap, thread, face, spot-face, form, recess, saw, trepan . . . all within certain limitations. For instance: Your product must be such that it can be machined within the limits of 5 HP units, and of a size and/or weight that can be handled efficiently by an operator.

We have some interesting bulletins we shall be glad to send you. Perhaps you manufacture a part where a few cents saved would put you in a better profit position and pay for the cost of a Kingsbury. Let's talk it over.

Kingsbury Machine Tool Corp.
107 Laurel Street, Keene, N. H.

KINGSBURY
AUTOMATIC DRILLING AND TAPPING MACHINES
for Low-Cost High Production





Steam Iron Sole Plate- Cast Aluminum 17,920 operations per hour

Here's a case where a Kingsbury really "gangs up" to get the work out! The part is a cast aluminum sole plate for a steam iron; 26 angular holes to be drilled and one boss to be spot-faced.

The machine has an 80-inch base and a 20½-inch diameter index table with 7 fixtures. Five drilling units are mounted on the base. Two of these have 9 spindles each, one has 8 spindles and two have single spindle heads to perform the rough and finish spot-facing operations on one ¾-inch boss. Bushings guide all tools.

The table indexes through five working stations. At Station 6, work is unclamped automatically and removed by the operator. At Station 7, the operator places new work in the fixture, where it is clamped automatically.

Operations per hour on two forged steel connecting rods

The problems: to drill a concentric step-down hole thru, at an angle of 30°, in each of two connecting rods; also to mill a notch in each rod for the bearing.

To obtain high production at low cost per part, the machine was designed to handle *two* parts in each work-holding fixture. Six Horizontal (H) Units are mounted radially on an 80-inch base. The 26-inch index table has six of these "twin" work-holding fixtures, automatically clamped and unclamped. The machine indexes through five work stations where eight operations are performed. The longer holes are drilled in two operations to maintain a balanced time cycle at each station. Bushings guide all drills.

Station 1, Unit 1 H has two-spindle head and drills one .129 dia. hole at an angle of 30° in each rod to half the required depth.

Station 2, Unit 2 H with milling unit mills the notch in the *right* hand part.

Station 3, Unit 3 H has two-spindle head and completes the drilling of the .129 hole in each rod.

Station 4, Unit 4 HR is a single spindle unit with sensitive feed; drills .067 hole thru from bottom of .129 hole in *right* hand part. *Unit 4 HL* with milling unit mills the notch in the *left* hand part.

Station 5, Unit 5 H is a duplicate of Unit 4 HR: drills .067 hole thru from bottom of .129 hole in *left* hand part.

Station 6: operator removes the two finished parts and replaces them with two new parts. Parts are unclamped and clamped automatically in the work fixture.

NOW

24 hour delivery on Stub Screw Machine Reamers from .060" thru 1"

L&I, the reamer specialists, now provide another spectacular service for reamer buyers and users—Immediate delivery on Stub Screw Machine Reamers. This offer applies to the first two dozen of your order in each given size reamer.

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Backlash

EXTRACTS FROM CURRENT LETTERS TO THE EDITORS

A Protest

As an engineering student, I feel I must protest against Mr Eugene K Chapman's letter (*AM*—Dec 20 '54, p69). I have already received several interesting offers from potential employers but, although I have already had considerable shop training in school, the one I propose to accept is the one that promises me two years of practical experience in the shops before moving me into more theoretical work.

I have my batchelor's degree, expect to have my master's next June, and shall go after my Doctorate while working. Does Mr Chapman believe the Board of Examiners may refuse me my final degree on the grounds that I criminally disgraced the honorable profession of engineering by working at a machine?

Robert Slendorf
Buffalo, NY

Automation and the GAW

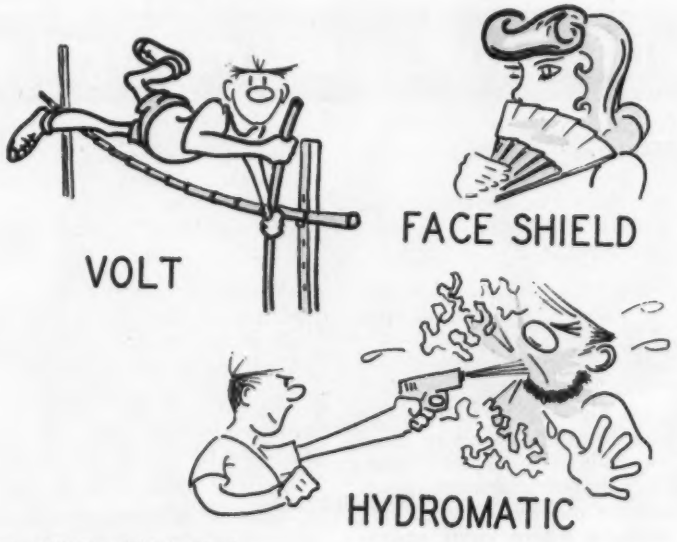
Automatic handling has made tremendous strides since the early transfer machines of WW II. They were not all satisfactory, but they made a beginning for our present-day success. Now we have automation units that will perform all the operations on a cylinder block at the rate of 100 blocks per hr with a single operator.

But this is not the first drastic change to be made in industry. We should not forget that earth-moving machinery has almost entirely replaced the thousands of men who formerly wielded pick and shovel. And it should be helpful to study the way in which those displaced men were absorbed into industry, especially as it is evident that they are now all receiving a higher wage than before.

Both management and labor leaders are faced with a real problem, for ways must be found to utilize the labor displaced by automation units. Labor leaders were quick to recognize the problem, but none has yet proposed a practical solution. They have proposed that, following the seniority rule, older men, in years of service, be retained as long as possible. This should be a good time to reconsider our ideas as to seniority. All agree that length of service is an important factor in employment practice, *if this means greater skill and usable experience.* But this is not always the case. Seniority should be the deciding factor only when

GRINETICS

By D G SMITH



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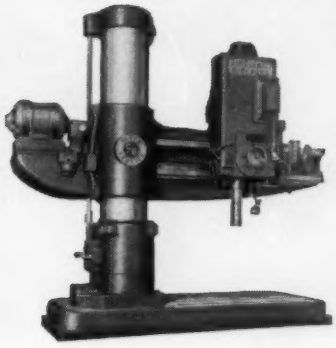
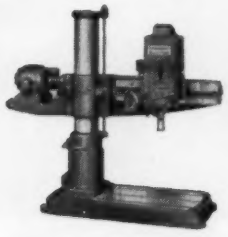
There's a SUPER SERVICE for your job...

For greatest savings in drilling cost The Cincinnati Bickford Tool Company offers a complete line of 34 different sizes and types of drilling machines. One of these machines will cut your drilling costs. Our engineers will help you select the proper machine for your work. Write for bulletins on the machines that interest you.

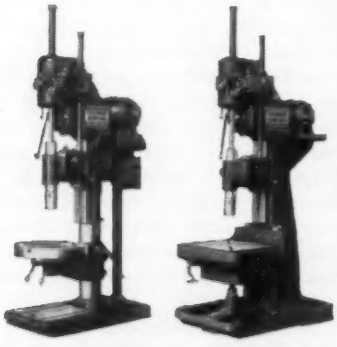
The SUPER SERVICE Master Radial Drill, as described in Circular R-22, is built in 7′ to 12′ arm lengths and in 22″ and 26″ diameter columns. This machine has 36 speeds and 18 feeds powered by motors from 20 to 40 HP.



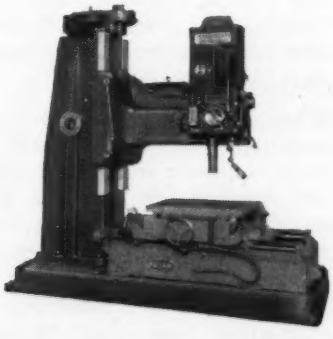
The 36-speed 18-feed SUPER SERVICE Radial Drill, as described in Booklet R-29, is furnished in 13 different standard sizes, ranging from 3′ to 8′ arm lengths and 11″ to 19″ diameter columns. These machines are furnished with 7½ to 20 HP driving motors.



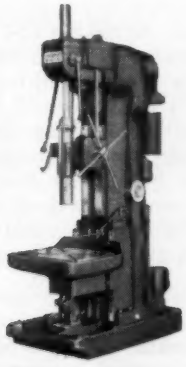
The 9″ Diameter Column SUPER SERVICE Radial Drill, as described in Circular R-21C, is built in either a 3′ or 4′ arm length with 9 speeds and 4 feeds powered with a 3 HP driving motor.



The SUPER SERVICE General Purpose Upright Drilling Machines, as described in Booklet U-25, are furnished in 21″, 24″ and 28″ sizes. From 8 to 12 speeds and 4 to 9 feeds. The machines are powered by either 3, 5 or 7½ HP motors.



The new SUPER SERVICE Precision Drilling Machine is especially suited to operations in conjunction with an automatic spacing table. This 36-speed 18-feed 15 HP motor machine is more completely described in Circular FH.



The SUPER SERVICE High Production Manufacturing Type Uprights have many of the advantages of the general purpose drilling machines but, due to their simplified construction, they are much more economical. They are furnished in 21″, 24″ and 28″ sizes with 3, 5, 7½ or 10 HP driving motors. Booklet U-27 will furnish you more complete details.

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RADIAL AND UPRIGHT DRILLING MACHINES

THE CINCINNATI BICKFORD TOOL CO.

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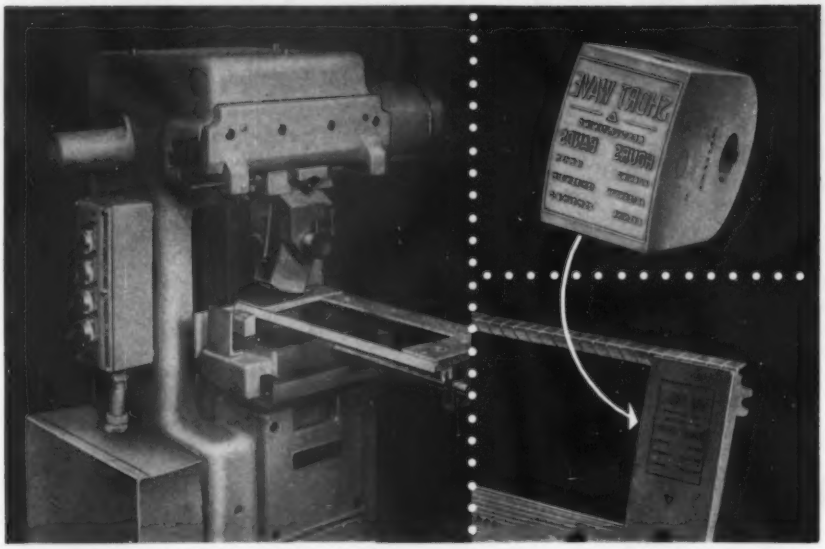
LEADERS IN INDUSTRY MARK WITH NOBLEWEST

RECIPROMATIC

MULTIPLE PASS ROLL MARKING MACHINE



Noblewest's RECIPROMATIC Model 50P1 used for marking portable short wave radio panels with a sharp, permanent, extra-deep impression. Upper right shows Rocker Marker Die and marked panel below.

- ***For Extra Deep Marking***
- ***For Normal Depth Marking on Fragile Parts***

Another NOBLEWEST mark of achievement! This job required unusually deep marking on die cast parts which would have been fractured by marking the impression with straight pressure. But with the Noblewest *Reciprocatic*, a permanent, extra deep impression was *rolled* into the metal by several passes of the die . . . without distortion . . . or fracture.

Among the many features of this Recipromatic ROLL-O-MARK all-pneumatic marking machine is a special control circuit which permits any number of roll marking passes to a given part . . . air-operated work table which provides uniform marking pressure and compensates for dimensional variations in piece parts.

Whatever your needs for metal marking, Noblewest makes the machines, tools and dies for doing the complete job faster, better, at lower cost. And remember, Noblewest Roll-Marking is *permanent* marking—*good for the life of your product.* There is a Noblewest representative near you. Write to Noble & Westbrook Manufacturing Company, 17 Westbrook Street, East Hartford 8, Connecticut.

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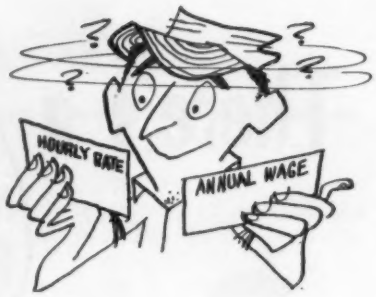
MARK IT BEST WITH

NOBLEWEST IMPROVED MARKING DEVICES

NOBLEWEST

ORIGINATORS OF THE ROLL MARKING PROCESS



other qualifications are equal. We have examples, from Congress down to social clubs, where the selection of officers by length of service fails to produce the best men for the job.

Every effort must be made to find work for all who are displaced by the new machines. Severance pay and unemployment insurance are great steps forward since the old days, but they are not the final solution. Some of the proposals, such as increasing the pay of the man retained, do not meet the situation. Nor will any of the feather-bedding practices that have crept into railroad employment solve the problem. Unless the new automatic machines can help in securing greater returns for both management and labor, they are not economically sound.

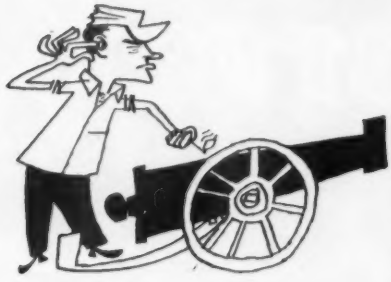
Growing use of automation is bound to lead to discussion of the guaranteed annual wage, which has been just under the surface for many years. It should be considered and discussed in a cool and dispassionate manner. One stumbling block is the idea that such a wage can be based on the maximum earnings of those now employed. There are probably more concerns now using the annual wage than is generally recognized. Prominent among them is the Hormel Co which, after years of experience, not all of them harmonious, has worked out a method that seems quite successful.

Being a seasonable industry, it makes a good one for careful study. Both sides should approach the problem with minds open enough not to expect perfection or complete satisfaction on either side. The annual wage can be little more than a drawing account, or minimum wage, but one which the housewife can depend on week after week. There will be times when the account is overdrawn when work is very slack; to be made up and materially added to when the company is busy. Any type of feather - bedding is uneconomic, whether a man draws pay for watching some one else work, or is a relative of the boss in a soft office job.

We should have reached the stage

where all differences can be ironed out without time- and money-losing strikes or lockouts. No Taft-Hartley or similar law should be necessary. When we consider that readjustments of wages, hours, or what have you, are all made retroactive, there is little real excuse for adult men and women allowing necessary work to be tied up for any reason whatever. When we all realize that "the show must go on," we shall have made a great advance in our way of life and can claim that our way of life is best for all of us.

Fred Colvin
Point Pleasant, NJ



Declaration of War

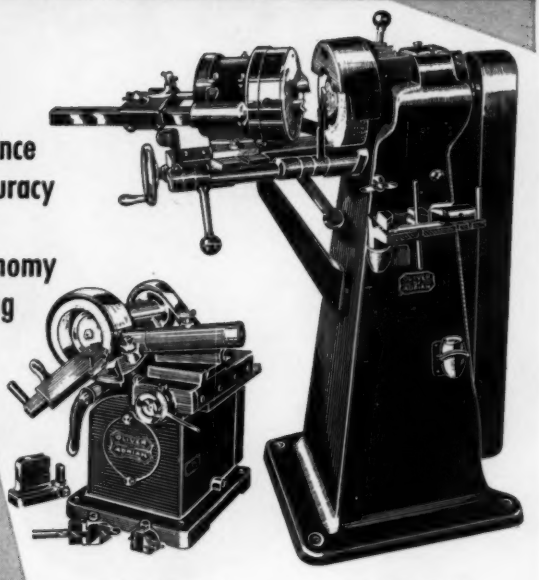
I take violent exception to Mr Eugene Chapman's remarks (*AM*—Dec 20 '54, p69). Is he so high and mighty that he thinks engineers are superior beings who must never soil their lilly-white hands by low, menial work? If so, I haven't much respect for his attainments. I don't know about the Civils, but no mechanical engineer is worth the powder to blow him to you-know-where unless he has had some good practical experience in the shop. How else can he get the knowledge of machine tools and their capabilities?

It's remarks like Chapman's that get us engineers a bad name in the shop. Remember the fuss when Mr Wilson compared working men to bird dogs? Now Mr Chapman says they are criminals. When a young engineer is sent into the shop, it is not a de-motion, it's a pro-motion. It means that, instead of spending the rest of his life at a drafting board, he is on the road to success; he is stepping on the first rung that may lead him to foreman, superintendent, plant manager, and even president.

Get wise, Chapman. Don't be afraid to put on a blue shirt and mingle with your social inferiors. Maybe they don't all have college degrees, but plenty of them are a lot smarter than you. Get a year or two of shop experience, then maybe you'll turn out to be a real engineer.

Thos Reinauer
Houston

Look—What YOU Get
with
OLIVER DRILL POINTERS



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- positive DRILL accuracy
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MODEL #21 MODEL #510

OLIVER DRILL POINTERS uniformly machine grind all drills to a perfect balance — each lip of the drill doing equal work. Because the unique OLIVER feature provides the only scientifically correct and theoretically perfect drill point each drill lasts from 2 to 3 times longer than ordinary hand-ground drills.

Drills machine ground the OLIVER way cut faster and more accurately . . . produce more perfect holes. Avoid costly lags in production schedules by eliminating excessive drill breakdowns and *dull drill* slowdowns. Improve the wearing life of your drills . . . at the first sign of dullness remove them and machine sharpen them . . . with an OLIVER DRILL POINTER.

No. 510 for drills ¼" to 3"—2-3-4 flute. Variable clearances. Variable point angles. Automatic operation.
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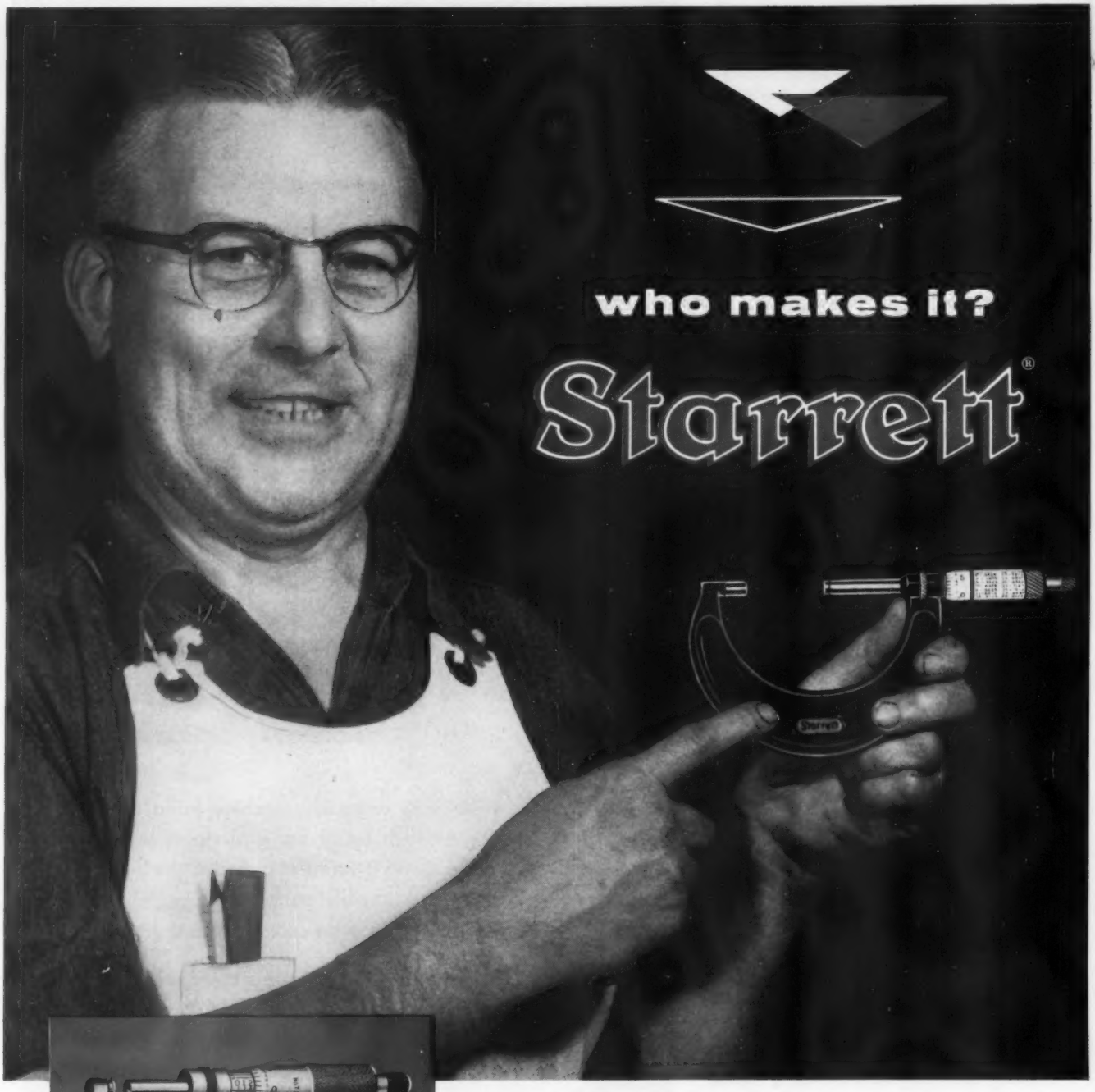

A "mike" by any other name is never quite the same to a mechanic, machinist, toolmaker or inspector. Years of working with Starretts has convinced skilled craftsmen that no other make of precision measuring tools has the same carefully balanced design, convenient features or unfailing accuracy.

You'll save many a gripe if you choose for the shop the same tools your men buy for themselves. And remember, Starrett also makes dial indicators, hacksaws, band saws, band knives and precision ground die and flat stock . . . quality products readily available through a convenient and reliable source of supply — your local **INDUSTRIAL DISTRIBUTOR.**

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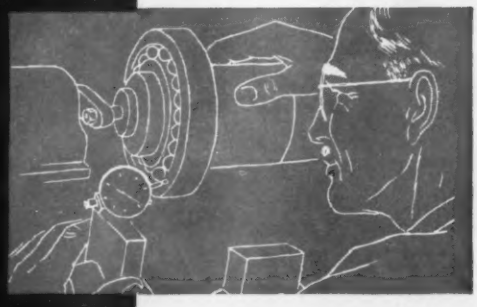

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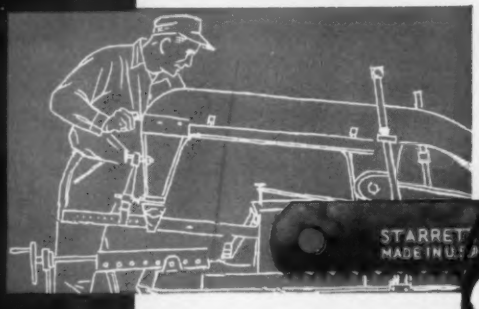
Standard for quality and precision — a complete line for every gaging or production inspection application.



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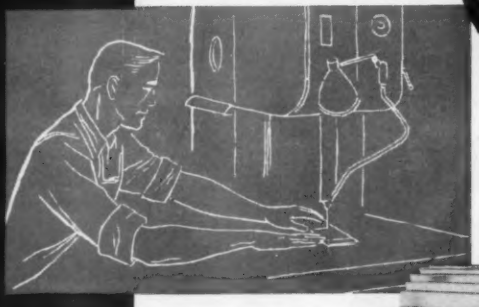
Precision made by the World's Greatest Toolmakers for top performance, uniformity and maximum cutting economy.



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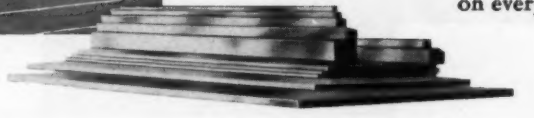

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One of the main reasons for Danly's faster die set service is the *interchangeability* of die set parts achieved by Danly. It starts at the main Danly Plant where die set components are produced to Danly's traditional high quality, precision standards. The faster service cycle continues at all of the Danly Branch Plants where thousands of *interchangeable* die set components are stocked. The cycle is completed at the Danly Branch in your area where these parts are assembled as a die set to meet your specific requirements and shipped as soon as your order is received. So remember—for the best in die sets in the shortest time, the place to call is your local Danly Branch.

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STANDARD OR SPECIAL
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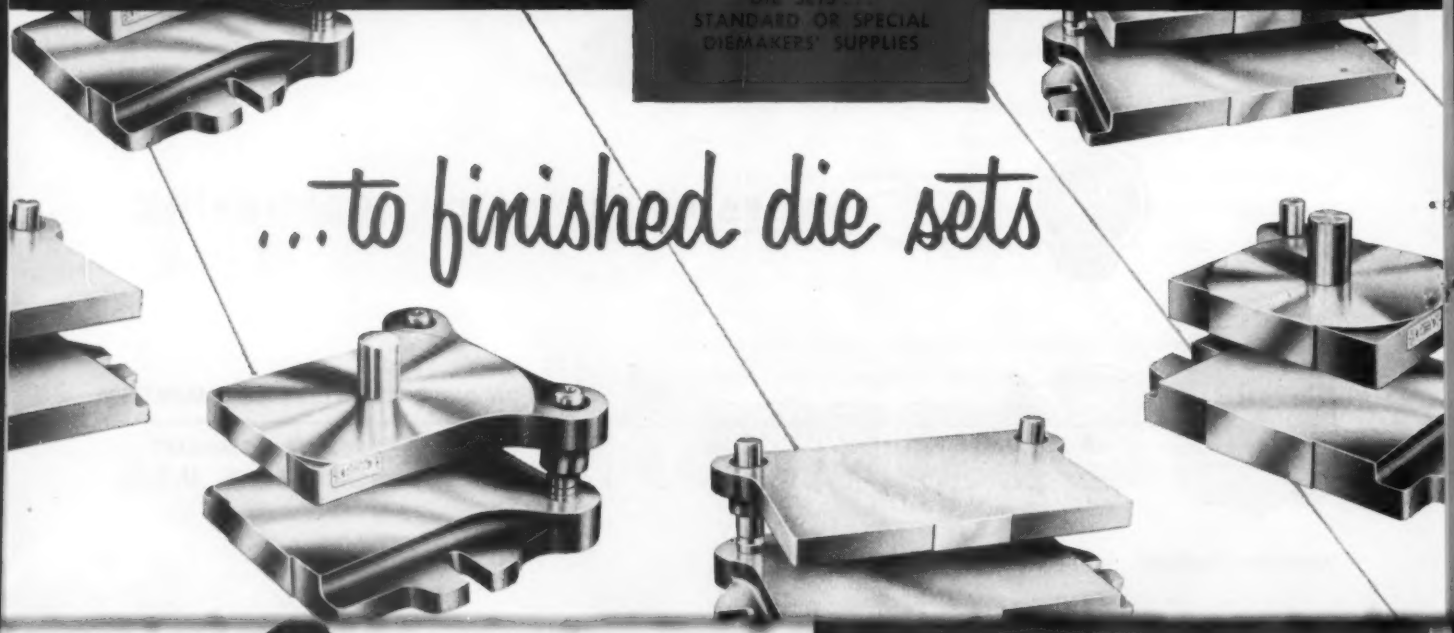


Spot News of Metalworking . . .

Is Detroit stockpiling against a strike? . . .

If that's what this year's record first quarter output means, as some Detroit insiders think, automakers could be playing into Walter Reuther's hands — he could settle contract differences peaceably, forcing overstocked automakers into second-half layoffs, then cite "reckless production scheduling" as a guaranteed annual wage lever.

Special tooling output will stay about the same . . .

this year as last year, but it could swing 10% up or down. That's National Tool & Diemakers Association's guess, based on an informal poll of the industry.

Anti-discrimination clauses in government contracts . . .

are having some teeth put in them. The old "regardless of race, religion . . ." clause now covers upgrading, demotion, transfer, retirement, recruitment, layoffs and pay rates with regard to discrimination. Already in new government contracts, the enlarged clause may portend government crackdown on contract violators.

British tool builders are advertising in Russian trade journals . . .

with, to date, half-page ads for export sale of drilling machines and lathes. Up to now, even the Russians haven't advertised in Russian trade journals.

Investigation into mist cooling . . .

is being launched by ASTE to find out which combinations of speeds, feeds, depth of cut, tool material and configuration, cutting fluids and additives, and fog-generating methods work best.

We discard enough manganese to keep the steel industry supplied . . .

with all it needs to make vital defense alloys — in spite of an almost complete lack of manganese resources. Armour Research Foundation cites this as a prime example of a need for better metal recovery processes.

Novel way to boost replacement orders . . .

works this way for an Ohio industrial crane maker. Three man crew (engineer, shop man, draftsman) goes into a customer's plant, looks over its firm's equipment installed several years before, and gives management a list of parts that need replacement.

Permanent machine tool mart . . .

will be set up March 1 in the two buildings formerly occupied by New York's John Wanamaker department store. About 1.5 million sq ft of exhibit and office space will be available at a rental of $2-per-sq-ft-per-year. (See p276).

Magnesium sheet bonded to vinyl plastic . . .

is material for the new Samsonite luggage line — the first mass-produced magnesium consumer item, and the first payoff from Dow's new Madison, Ill, rolling mill.

NEW STYLE 46-D

For accurate reconditioning of all types of single-point boring, turning and facing tools; also dovetail and straight shank form tools. This grinder has a new in-built motor spindle designed for maximum rigidity. Wheels are mounted on the spindle shaft. Ball bearings are lifetime lubricated. Tool rest tables are at a comfortable height for operator convenience.

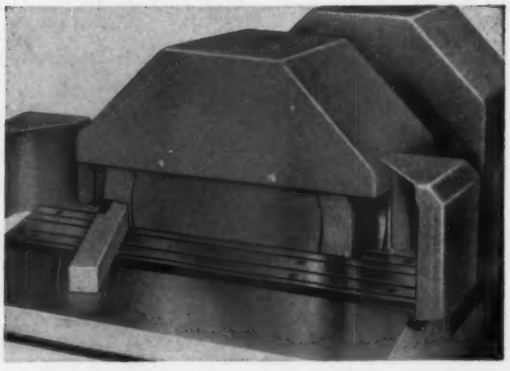
NEW EX-CELL-O CARBIDE TOOL GRINDERS

STYLES 46-D AND 49-A

NEW STYLE 49-A

A heavy-duty grinder that takes carbide, cast alloy and high-speed steel tools, medium and large size.

This new grinder has a new coolant system; is easier to clean and stays clean longer; troughs and coolant return lines are bigger, more accessible, and a settling tank is added.



LARGE TOOL REST TABLES

Illustrated is the tool rest table on the Style 49-A. It supports the biggest tools firmly. Adjustment is quick and easy to the required angular setting, and to compensate for wheel wear.

Wheel spindle is permanently lubricated.

There's an Ex-Cell-O Grinder to suit the needs of every shop, large or small. For new low prices on the above models, and for data on Ex-Cell-O's complete tool grinder line, write to Detroit, or call your local Ex-Cell-O Representative.

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Washington . . .

- ***A "Sleeper" In the '56 Budget***
- ***What You Can Look for in Taxes***
- ***How to Avoid Tangling with Taft-Hartley***

The Spending For Military Hard Goods . . .

now planned by Eisenhower in his new budget may not turn out to be as high as expected. (see page 274)

The Pentagon's spending programs add up to $35.75 billion — but Secretary Wilson says that he expects that actual spending for the year will be only $34 billion — a reduction of $1.75 billion.

There's a suspicion that this $34 billion is a White House-imposed ceiling — that the military is expected to hold down its operations in order to make possible a smaller deficit ($2.4 billion) than is anticipated for this year ($4.5 billion).

Another Tax Cut Would Be Nice . . .

but now Eisenhower is placing his hopes on growth in the economy to boost the government's tax income to the point where it will finally equal the outgo. This doesn't mean there won't be any more cuts.

But in general, you can expect the administration to work toward "growing up to" federal spending of the present size, rather than whittling spending back to the level of what's coming in.

Eisenhower sees rises in both corporation profits and personal incomes during fiscal 1956 — which he figures will bring federal tax revenues up $1 billion from this year's estimated $59 billion. For this he's counting on holding tax rates at their present level.

Corporate income tax is due to drop to 47% on April 1, and so are a number of excises. Chances are these will be kept.

But in the years ahead, Eisenhower and Secretary of the Treasury Humphrey see federal revenues rising even while tax rates are being lowered.

Actually, a tax cut is almost a certainty next year — a Presidential election year. Eisenhower himself specifically held out hope for such cuts a year hence, even though he still counts on a deficit that year — another clear case of his putting tax cuts ahead of budget balancing.

The tax picture is bound to become more confused very quickly, though. Already the Democrats are talking about getting one up on the President by passing some sort of cut for individual taxpayers which they would tack onto the bill continuing corporate and excise rates at their present level.

Avoiding Taft-Hartley Violations . . .

means an employer must tread a thin line if he wants to question his employees about union activity.

In a new decision, the National Labor Relations board spells out how this may be done.

Under new Board rules an employer may discuss with his workers whether a union really has their majority support. Determining a union claim of majority status through interrogation of employes is okay — but it must stop there.

What is strictly forbidden is any attempt to restrain or interfere with employees in their desire to support a union. That means management must studiously avoid any questions or remarks that could be interpreted as threat or coercion against the employees.

Here's what happened in the particular case that brought the Board's ruling. The AFL Machinists' Union had attempted to organize employees of the Graber Manufacturing Co of Madison, Wis. Company officials began questioning employees about the union, including the most active union supporter in the plant. When the Machinists lost a representation election at Graber, they charged the company violated Taft-Hartley through its activities.

The four-man Board agreed, basing its opinion on these three actions: one official warned an employee she "would be sorry" if the AFL Machinists organized the plant. Another advised a worker to remove her union button. The company was also wrong in making it a point to question an active unionist.

You can still question employees about a union claim that it represents a majority of your plant workers . . . but be sure it's restricted to the one issue and does not indicate opposition to the union.

Organized labor has the ear of Congress. This will become increasingly evident as the 84th Congress takes up labor and welfare legislation dear to the hearts of top union officials.

All but one of the Democrats on both the Senate and House labor committees were backed by labor's political wings in the last election.

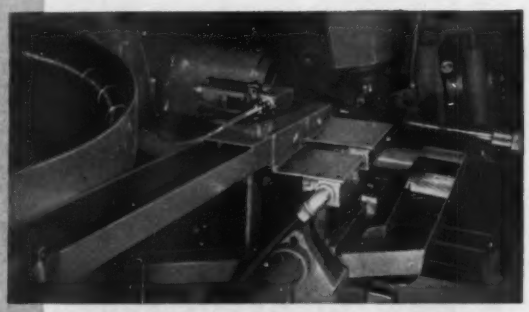
GEAR & SPLINE PRODUCERS:

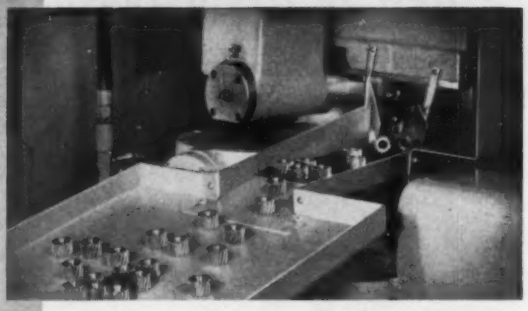
new methods *cut costs* for YOU

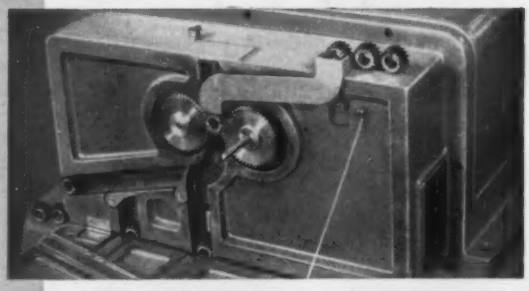
Automation of gear production is here. Standard Michigan gear hobbers, gear shavers, and gear speeders can now be equipped with hopper feed. Gravity or belt conveyors carry the gears from one operation to the next. Automatic centers load and unload the work without human assistance.

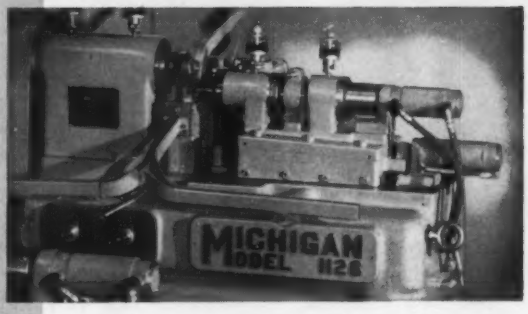
The old bugaboo of scrap gears is being dealt with by gaging all gears automatically with the Michigan gear gaging system as they are produced. Oversize, undersize or off-lead gears are shunted aside. Gear production machines can be either shut down for adjustment or automatically adjusted for correct center distance when as few as two consecutive scrap gears are produced. Automation speeds up sound testing on Michigan gear speeders to assure quiet gears. All this cuts scrap loss, increases production, prevents tie-ups, and cuts manpower requirements.

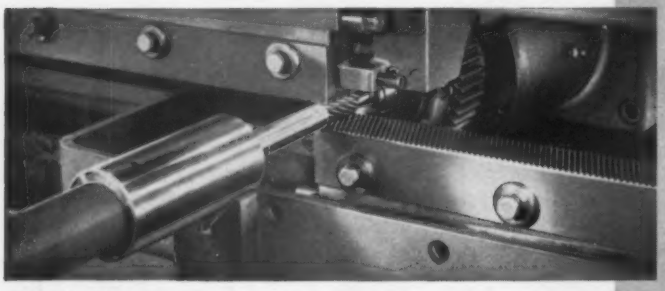
Write for information on these cost cutting methods.











*Patent Pending

Splines can now be formed automatically up to thirty times faster by Michigan's *ROTO-FLO spline roller. Superior quality helical or straight splines can be produced at a significantly lower cost. Ask for bulletin RF-54.

Michigan Tool Company

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• Some Notes on GM's Motorama
• GAW and the 30-Hour Week
• Motordom Hits the High-Wage Mark

Motorama Jottings . . .

GM's display of two 150-hp V-6 engines of the fuel injection type stirred speculation that the corporation might be headed toward use of that small but expensive engine within a couple of years.

Actually, the two V-6s announced as powerplants for the LaSalle II sports coupe and sedan — two of several experimental cars shown at the Waldorf in New York — are little more than shells. But GM, like most other auto makers, has studied V-6 performance from time to time. Chevrolet, in fact, has most recently been running tests on the small engine which, if ever produced, likely would replace Chevvy's inline 6.

Disadvantage of the V-6, from an engineering standpoint is that it is not inherently balanced. Aside from that, tooling for such an engine would be most expensive — possibly an entirely unjustified expense during the next several years.

Reason is that gas turbines, in production and in highway use, may be nearer than most auto people are willing to admit at present. One highly knowledgeable executive, not in the auto industry, predicts that turbines will be in production within four years and that well over a million turbines will be in highway use within a decade. The threat of the turbine, therefore, would seem to make any decision to tool and produce a V-6 unwise, despite that engine's advantage in size.

In this connection, Ford has now joined others in assembling an experimental turbine. Termed a version of a "regenerative free turbine" powerplant, Ford's model has not been assembled as a complete unit. Components were developed as separate packages.

Insofar as continued use of plastics for auto bodies is concerned, H. H. Curtice, GM president, is of the same opinion as a year ago. Plastics, he said, are very useful in development of new model programs, but where time permits, "we will always tool for steel rather than plastics."

GAW and Automation . . .

Reporters once again were unsuccessful in drawing from Curtice any suggestion as to how GM might settle with CIO's Auto Workers this year. Told that UAW and CIO president Walter Reuther is not reluctant to discuss the guaranteed annual wage, Curtice said: "I recognize that, but that is his problem." The GM chief did touch on another aspect of labor demands, however: The 30-hour week for 40 hours of pay.

This country, he said, is not ready for a 30-hour week. He hoped there would be no pressure from any "important sources to shorten the work week . . . below 40 hours."

In a Detroit meeting, another labor leader was not reluctant to discuss the guaranteed annual wage, either, but in terms which vary widely from those used by Walter Reuther and other auto union chiefs.

James Hoffa of the AFL Teamsters said his union would study the annual wage closely before advocating its acceptance. Almost 75% of his men, he said, already have a guaranteed wage. That in reference to milk, bread, newspaper, meat and produce truck drivers doing non-seasonal work.

"We know," said Hoffa, "that employers must make a dollar in order to pay . . . our truck drivers. When the trucks are standing still, it follows that employers are not making the money to pay wages." Auto makers whose cars sometimes "stand still" in dealer showrooms were wishing Reuther could be brought around to the Hoffa viewpoint.

A remark by Alfred Sloan, GM chairman, outlined GM's position with respect to Reuther's "warning" that automation may jeopardize thousands of jobs. Sloan said that the prospect of large numbers of electronic machines "gives us opportunity to re-equip all of our manufacturing plants," in turn saving labor and money "so that prices can be lowered and more products sold." Automation, it seems safe to say, is an irresistible force which labor and management (both occasionally immovable objects) must learn to live with together.

Average weekly factory earnings of $100 . . .

highest point in Detroit history, have been reached under the stimulus of terrific auto production in the first quarter of 1955.

Specifically, the Detroit Board of Commerce reported that the average workweek runs to 43 hours, and average hourly earnings are $2.33, for a weekly paycheck of $100.19. That includes overtime and other premium pay.

5203-R

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There is no way under the sun to do small, precision tapping with "production" speed, satisfactory tap life and acceptable accuracy, other than to use a tool designed for the specific purpose.

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WANT ALL THE FACTS ?

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IT'S A Hamilton Tool

USE IT WITH CONFIDENCE

Machine Tools . . .

Machine Tool Orders Exceeded Shipments . . . in December, for the first time since mid-1952. They soared to $60 million (203.3 on the National Machine Tool Builders' Association index), a gain of 76% over November.

It was the first time in 1954 that incoming business surpassed the volume in a comparable month of '53. Shipments fell just slightly under orders during December. They were 202.6 on the index.

New orders for the entire year 1954 amounted to $560 million. That hardly compares favorably with the total of $862 million the previous year.

The industry's production added up to $892 million last year. That represents a considerable drop, from shipments of 1,190,000,000 in 1953.

1955 Machine Tool Sales Should Be Better . . . than those of the past year. Production is likely to match new orders closely, as the industry's backlogs have shrunk to normal or less.

Upturn in demand for standard machine tools is reported by builders. Sales started to pick up last September and every succeeding month has shown a gain over the preceding month, with December far ahead of November, one company states.

Other builders of general-purpose machines confirm this optimism in varying degrees.

Most special machine tool manufacturers are doing very well. At least one reports a pile-up of business that will keep his shop going full tilt throughout 1955.

Detroit Is Still a Good Source of Business . . . for many builders. Ford, for one thing, is in the process of allocating large orders for its new axle plant on Detroit's outskirts.

Plymouth, with its big tooling program for a new V-8 engine for 1956, has provided certain Detroit machine tool builders with substantial orders.

General Motors' subsidiaries abroad, Vauxhall in England and Opel in Germany, have bought some US machine tools recently for expansion.

Volkswagon, Germany's No. 1 volume car maker, also has purchased American machine tools to increase its productive facilities.

Delay in Initial Air Force Orders . . . for reserve machine tools may not be as long as 2-3 months, as recently reported. Chances are diminishing, however, for any of the $84 million to be placed as early as February.

All 1100 long-lead-time machines will be bought in the calendar year 1955. But many of them will not have been placed by the end of fiscal 1955 (June 30).

Procedure being followed in skin millers is typical of what will happen in every type of machine to be purchased. Requests for engineering proposals already have gone out to builders of skin millers.

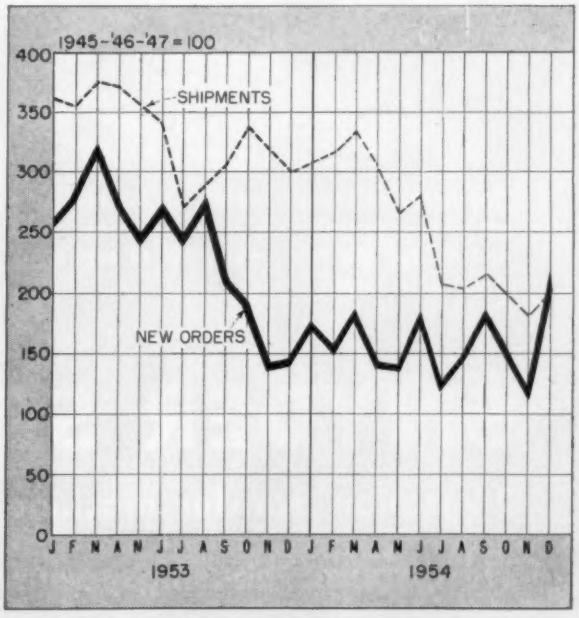
There will be a certain give and take between the Air Force people and the builders in arriving at final specifications.

Aircraft Makers Have Informed Wright Field . . . exactly what their skin miller requirements will be in case of mobilization.

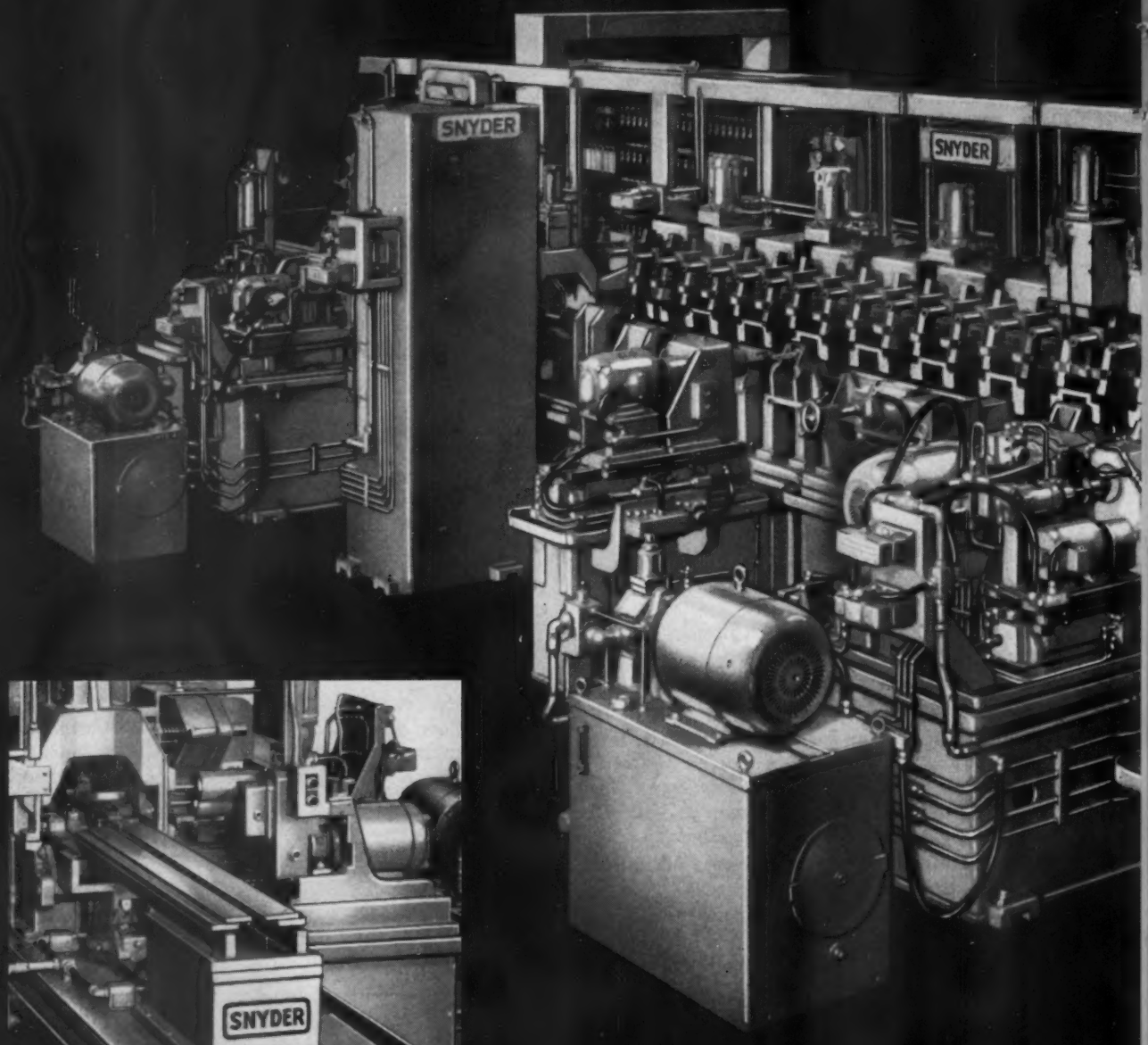
After the "specs" are finalized and the exact number of skin millers decided upon, the actual job of ordering will be turned over to regular Air Force contracting officers.

Spar millers, horizontal boring mills, tracer-controlled profiling and contouring machines, and both knee-type and bed-type millers will follow spar millers in the ordering process.

Ralph R Baldenhofer, executive vice president of the Thompson Grinder Co, Springfield, Ohio, has been appointed director of the Metalworking Equipment Division of the Business and Defense Services Administration, Department of Commerce. He succeeds Graham E Marx, vice president and general manager of the G A Gray Co, Cincinnati.



MACHINE TOOL ORDERS FOR DECEMBER were the highest since September 1953. In a single month, orders rose from 119.5 (1945-1947 = 100) to 203.3 on the National Machine Tool Builders' Association Index.



This is the discharge end of the machine. The part, which is originally in vertical position, is laid horizontally and swung 90° to expose all sides to the tools.

SNYDER SPECIAL automatic

24-station transfer machine for processing automotive water pump housings; drills, mills, faces, chamfers, taps all holes and probes tap drill holes. Production, 81 pieces an hour at 80% efficiency.

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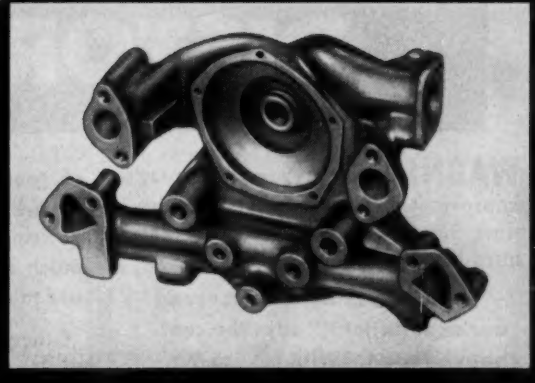

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Warner Gear Division, Borg-Warner Corp., Muncie, Indiana, reports on Texaco Marquenching Oil

WARNER GEAR notes great improvement in quenching results since *Texaco Marquenching Oil* was introduced.

"Results have been far beyond our expectations," says the company's report. "With Texaco Marquenching Oil we are handling greater loads than we ever could with ordinary quenching oils and of greater importance are getting less distortion. We like Texaco Marquenching Oil so much that we are extending its use to our other plants."

Other companies are getting similar results with *Texaco Marquenching Oil*. Users say it assures them the desired microstructure, reduces distortion and gives uniform hardness—all at a lower cost. *Texaco Marquenching Oil* is made especially for this service. It has outstanding oxidation-resistance, is always uniform in quality, and has a high flash point.

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Gaging Metalworking . . .

PRODUCTION INDEX
BASED ON MANHOURS WORKED IN THE FIVE COMPONENTS

	JAN '55(*)	DEC '54(p)	NOV '54(r)	DEC '53
Total index	**158**	**156**	**155**	**156**
Machinery	120	122	133	
Electrical Machinery	192	199	174	
Autos	147	132	112	
Other Transportation	287	275	302	
Other Metalworking	126	128	135	

(*) Estimated (p) preliminary (r) revised

Metalworking Production Stays High . . .

as we get farther into 1955. In January there was no retreat from the December level, which topped the October mark by a healthy margin.

American Machinist's Production Index is estimated at 158 the past month, with 1947-1949 taken as 100. Back in October, the index was at 149.

It's getting to be an old story, but it still is true that Metalworking owes much of its current vitality to the near record-breaking pace of the automobile industry.

That is not the full explanation, however. Many indexes in various segments of Metalworking have been looking up recently.

New orders for industrial supplies and machinery have risen. Business of commercial heat treaters, as reported by members of the Metal Treating Institute, is up somewhat.

A Good Volume of New Machinery Orders . . .

has helped to push up the McGraw-Hill Index, which does not include electrical machinery. In November, the index spurted to 108 from 87 in October. In December it fell back to 94, but even that is higher than it got anytime during the year except in March and June.

Cutting tool manufacturers say that business is looking up. Inventories in dealers' and consumers' hands are well down; and the pickup in Metalworking operations is being reflected in improved cutting tool sales. Users, however, don't seem interested in rebuilding inventories very much and are relying upon prompt deliveries for current needs.

Even machine tool sales have increased sharply. Most encouraging of all has been the upturn in demand for general-purpose standard machine tools.

Steel output is doing well, bolstered by automotive requirements. Flat-rolled steel and bar stock for forgings are the tightest products. Steel people vigorously assail any talk about a growing gray market in flat-rolled items. Major warehouses are reported to have plenty of flat-rolled steel in the desired sizes and grades.

Best recovery in steel warehouse business has been in the South. Little or no gain is reported from the Southwest and Pacific Coast. In fact, imported European steel, mostly light structurals and reinforcing bars, are adding to competition in Southwest.

Brisk Automotive and Appliance Parts Orders . . .

have boosted production in many parts plants to the highest point in months. Parts suppliers to independent auto makers, as well as to the Big Three, are on double shifts five days a week.

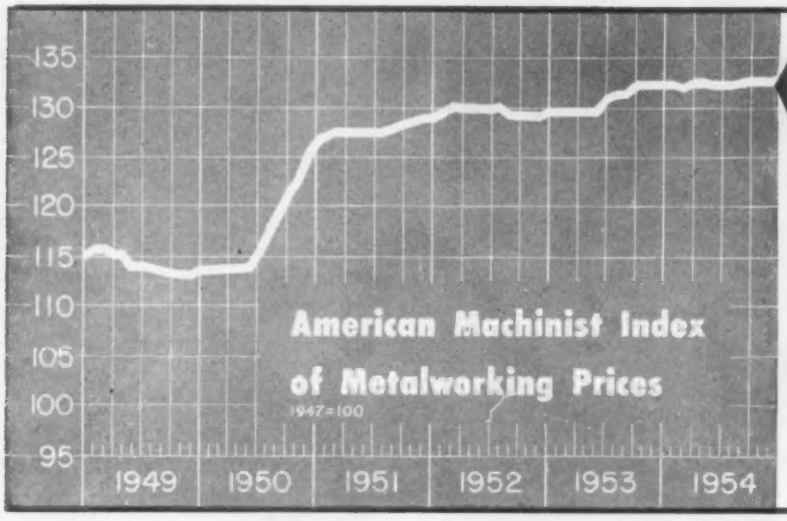
Percentage of inquiries converted into orders has gone up sharply in the screw machine products industry lately.

Many West Coast metalworking firms predict improvement of 5-12% in business the first half over the same period a year ago.

Building hardware volume is traced to strong gain in construction. Makers of farm machinery and of irrigation and sprinkler equipment expect a good year.

Defense production still looms as a strong factor in maintaining Metalworking activities this year. While it is true that a smaller percentage of the total business done by many companies will stem from defense contracts, aircraft operations will stay close to the 1954 volume.

Gaging Business . . .



133.7 PRICE INDEX

	JAN '55(*)	DEC '54(p)	NOV '54(r)	DEC '53
Total Index	**133.7**	**133.6**	**133.5**	**132.6**
Metalworking Machinery	**143.3**	**143.1**	**141.8**	
Other Machinery exc. Electrical	**137.4**	**137.6**	**137.4**	
Electrical Machinery	**131.9**	**131.9**	**132.0**	
Fabricated Metal Products	**130.6**	**130.3**	**128.9**	

(*) Estimated (p) preliminary (r) revised

US Business Is on the Rise . . .

and it's now clear that we hit the bottom of the recession in July 1954, when the Gross National Product (total value of all goods and services produced in the US) dropped to $355.5 billion from an all time peak of $370 billion in the second quarter of 1953 — a decline of 4%.

Gross National Product averaged $356 billion. This year, GNP will run to $365 billion — or even more — representing an increase of $10 billion or 3%. And when the results are all in, we may find that the last quarter of 1954 topped the all-time peak second quarter of 1953.

Industrial Output Is Going Up, Too . . .

after a year of vigorous ups and downs, marked by a July low of 123 on the Federal Reserve Board Index (peak was 137 in July 1953), when a large part of consumption came out of inventories.

Now, physical production is expected to go up steadily through the year, but at more moderate rates than the Gross National Products is moving.

But we may have a dip sometime this year because of seasonal factors in the steel, auto and construction industries.

Prices May Increase a Bit in 1955 . . .

though there is no assurance that they will not stay about where they are. For the past two years, prices have not moved much. American Machinist Index of Metalworking Prices, at 133.7, is up only one point from the level a year ago.

After new labor contracts have been signed, with some sort of concessions by management predicted, prices are expected to firm up more.

There is no getting away from the fact, however, that liberal price concessions are the order of the day in many consumer products. Automobiles and appliances, to name only two, are examples. List prices, in most cases, are unchanged, but sizable discounts and other price-cutting practices are freely indulged in.

WEEKLY BUSINESS INDICATORS

	Latest Week	Preceding Week	Year Ago
Business Week Index of Activity (1947-1949 = 100)*	138.0	137.0	124.7
Steel ingot operation (thousands of tons)	1,989	2,007	1,766
Electric power output (million Kilowatt hours)	9,928	9,833	9,014
Production of automobiles and trucks	183,572	177,877	149,841
Engineering construction awards (*Eng. News-Record* — millions)	$257.2	$364.7	$173.5

MONTHLY BUSINESS INDICATORS

	Latest Month	Preceding Month	Year Ago
Index of industrial production (1947-1949 = 100)*	130	129	126
Index of durable manufactures production (1947-1949 = 100)*	145	143	142
Durable goods manufacturers' sales, millions*	$11,634	$10,734	$11,867
Electrical machinery manufacturers' sales, millions*	$ 1,271	$ 1,238	$ 1,324
Other machinery manufacturers' sales, millions*	$ 1,915	$ 1,778	$ 2,068
Durable goods manufacturers' new orders, millions	$11,755	$11,547	$ 9,631
Electrical machinery manufacturers' new orders, millions	$ 1,420	$ 1,142	$ 886
General manufacturers' new orders, millions	$ 1,799	$ 1,774	$ 1,800

* Seasonally adjusted

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- ★ Proven Performance . . . with Extra High Safety Factor
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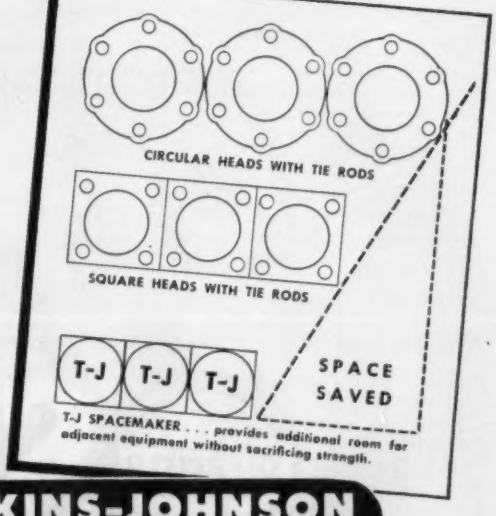
Compare feature by feature—you'll see why T-J Spacemaker Cylinders are today's top choice for streamlined power movement in automation! The only cylinder with all the extras as standard. Write for bulletin SM-454-2. The Tomkins-Johnson Co., Jackson, Mich.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T-J SPACEMAKER . . . provides additional room for adjacent equipment without sacrificing strength.

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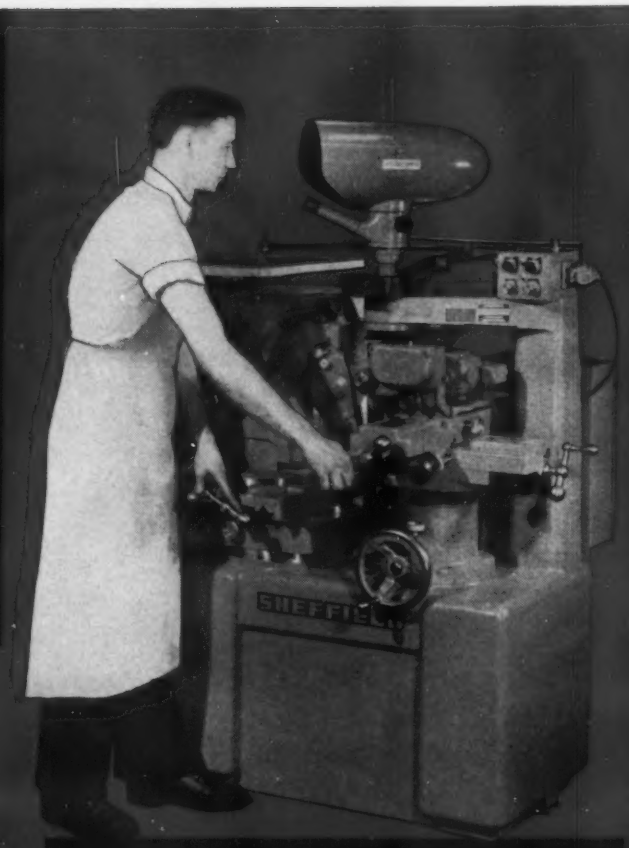

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SHEFFIELD

American Machinist

MAGAZINE OF METALWORKING PRODUCTION ★ ESTABLISHED 1877

Normalcy Is Here

Ill-fated President Warren G Harding gained much of his popularity back in the early 1920's by promising the American people a return to what he called "normalcy." Ever since, people have been searching for normalcy. They can't seem to find it.

There was the great 1929 boom, followed by the bust in the early 1930's. Then came a period of recovery, bolstered by all kinds of New Deal financial supports.

From 1939 to 1945 everything was abnormal. We mobilized and used our gigantic resources in World War II on a scale never before dreamed of. After the war, the American economy had the extraordinary task of trying to fill the pent-up demand for consumer goods that had been building higher and higher during the war itself.

Then along came the Korean "police action." And with it was ushered in a big national-defense production program. At the same time, a new concept of defense production as permanent business, for the sake of the nation's safety, began to take hold.

And so we arrive at January, 1955, with normalcy still an elusive sort of thing. As we look ahead, we hear business friends say this and that will make conditions abnormal—the continuation of the cold war, a Democratic Congress operating with a Republican president, the much-heralded rapid increase in our population, the much-publicized second industrial revolution.

Thus we finally get around to the conclusion that a state of normalcy is not for us. It never will be. We might as well make our business plans on the basis that the conditions under which we are operating today are about as near normal as we are likely to get.

With this premise to go on — that the constantly abnormal is actually normal — management has no excuse for not planning its course ahead for some time to come. The fact is that more and more companies are recognizing this condition and are making plans farther and farther ahead.

This is all to the good. It brings to mind a most important point. It was brought out recently in an address by Ralph Cordiner, president of the General Electric Co.

Mr Cordiner declared that "today too many businesses are being managed on a year-to-year basis." Some executives, he said, "act as though they do not believe the statistics of population growth."

He strongly advocated an abandonment of such short-term thinking. In its place he would adopt a policy of relating programs of physical expansion and capital investment "to the long-term growth curve rather than to the momentary peaks and valleys of current demand."

He would go so far as to make the conventional period of planning 15 to 20 years. With such a far-sighted view of where it may go, a company has a maximum chance of being at the right place with the right products in the right volume at the right time.

You may feel that 20 years is too long a time for which to plan your business. Your company is no match in size for General Electric. If so, make the span 10 years, or only five.

But whatever you do, don't try to blame your lack of forward planning on the excuse, no longer valid, that times are abnormal and therefore you should wait to do your planning until the nation returns to economic normalcy.

We repeat that we probably will not have normalcy, as we used to think of it, as long as we live. If it were here, we doubt if anyone would like it. It probably would scare the daylights out of many of us if it did come.

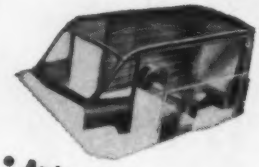
So let's forget about it and view things as they are as a period of normalcy. And suppose we plan ahead in our business as though we were going to have more of the same.

Burnham Finney

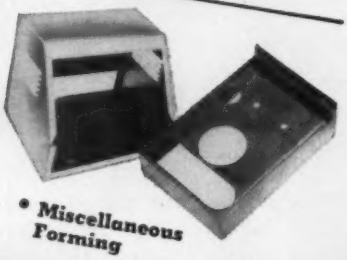
• Roll Tables for Steel Mill

• 30-Ton Electrolytic Plating Tank

• Control House for Steel Mill



• Automotive Products



• Miscellaneous Forming

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At Charles T. Brandt, Inc. speed, accuracy, and versatility are necessary to take care of large or small work in jobbing or production quantities.

Write for the New 72 Page Catalog B-4, describing operations, features, and special arrangements including wide beds and rams, bed and ram extensions, deeper gaps, higher die space and other features.

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American Machinist

42nd annual review of new metalworking equipment, parts, and materials;

these items were described in our pages during 1954...

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1955 PRODUCTION PREVIEW

American Machinist

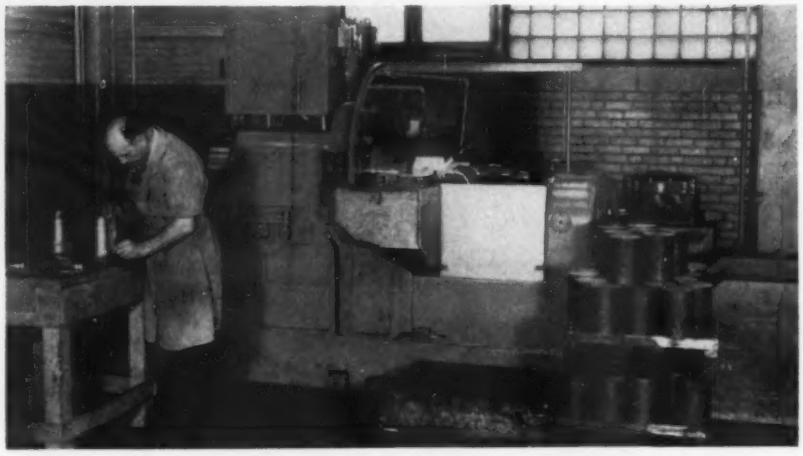
1955 PRODUCTION PREVIEW

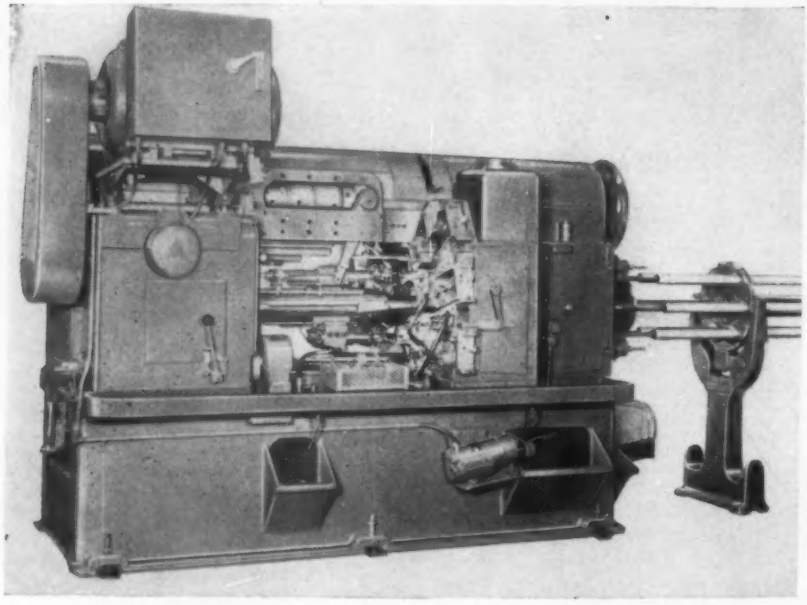
TURNING

summarized from descriptions published during 1954

AUTOMATIC CHUCKER — *The National Acme Co, 170 E 131st St, Cleveland 8.* Model MC 12-in. single-spindle machine can be adapted to automation line. Reported five times faster than similar equipment because of predetermined cycle time. Spindle speeds 25 to 360 rpm. Each toolslide (five on turret and two cross-slides) is independently cammed. Feeds: turret slides, 0.0037 to 0.0448 ipr; cross slides, 0.0007 to 0.0084 ipr.

BAR AUTOMATIC — *Cone Automatic Machine Co, Windsor, Vt.* Model VE eight-spindle 1-⅝-in. machine has: 3.6 sec min cycle; 8 min max cycle; two-train change gear range of 42 spindle speeds from 125 to 2.47 rpm. Five independently actuated box-type main cross slides afford seven tooling positions.



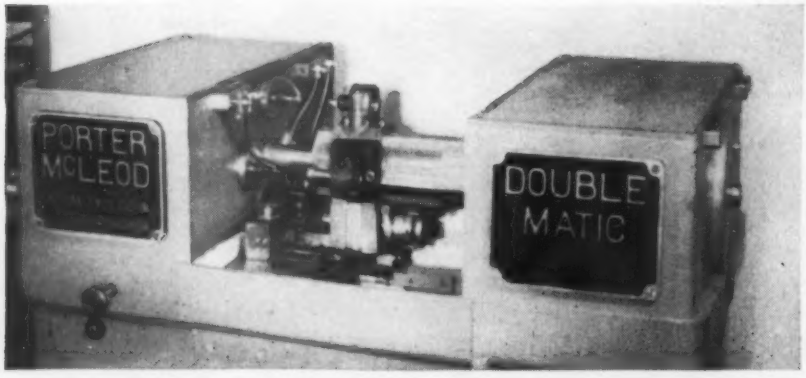


BAR MACHINE—*Cone Automatic Machine Co, Inc, Windsor, Vt.* 1⅝-in. model TF, the eleventh in six-spindle Conomatic line. More rugged construction with 3¼-in. work center clearance; 2.5 sec minimum work cycle (5 min maximum); two-train spindle-speed range with pick-off change gears; 31 speeds from 128 to 2502 rpm.

6-SPINDLE AUTOMATIC — *Eric R Bachmann Co, 27-11 41st Ave, Long Island City 1, NY.* Alfred Gauthier GM-12 has ½-in. capacity, 4-in. max turning length. Spindle drive is by chain and gearbox. There are five tool slides and six turrent quills in barrel-shaped turret. Turret index is independent of spindle and camshaft speeds. Drill spindles rotate counter to main spindle for high relative speed; threading spindles have differential speed while main spindle speed is constant.

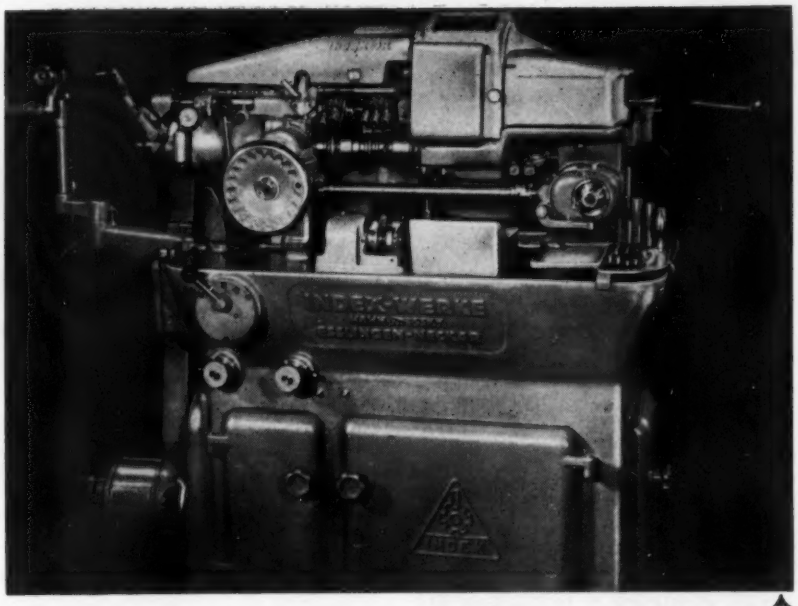
BORING HEAD—*Everede Tool Co, 2000 N Parkside Ave, Chicago 39, Ill.* Everede No. 1-50 boring head for automatic screw machines has leadscrew placed off center so bar length can be adjusted.

AUTOMATIC LATHE — *Hydra-Feed Tool Corp, 730 W Eight Mile Rd, Ferndale, Mich.* Combined speeds and feeds give metal removal rates of 52 lbs per min. Model HD-8 takes 30 hp; HD-16, 100-hp motor. Spindle speeds are infinitely variable from 82 to 2400 rpm on the HD-8.



SCREW MACHINE — *Porter-McLeod Machine Tool Co, Inc, Hatfield, Mass.* Turret with axis parallel to spindle, and supported both at headstock and tailstock, has live spindle and collet in one turret position for receiving work before cutoff and supporting it for final operations on cut end. Bar capacity is up to 1 in. dia. 4½ in. long; spindle speeds range from 400 to 3000 rpm; motor is 3 to 5 hp, running at 1800 rpm.

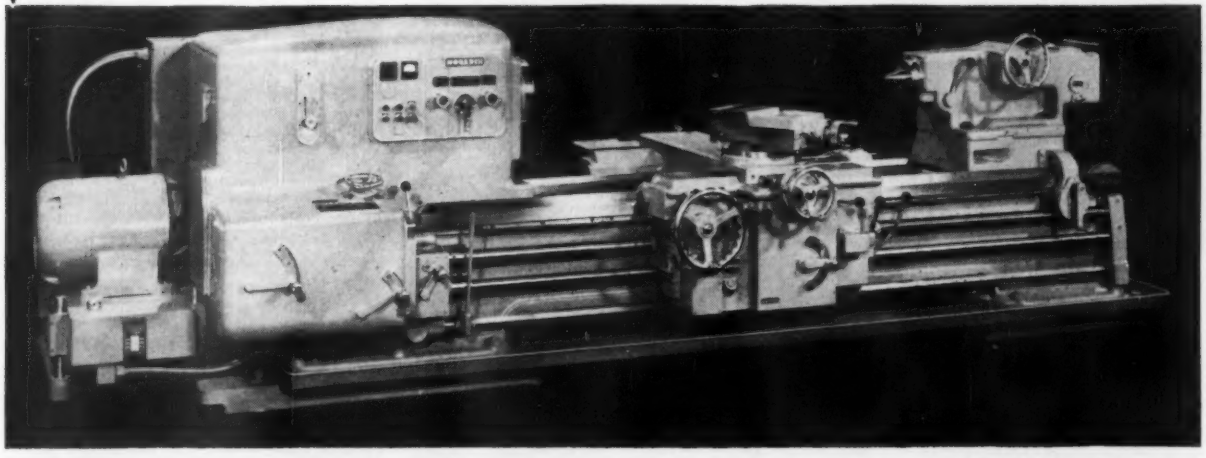
HAND SCREW MACHINE—*Wade Tool Co, Waltham, Mass.* Model 73 uses timing belt to drive headstock spindle. A mechanical reverse gives instant reversals without disturbing continuous forward operation of the motor. The drive gives an infinitely variable speed with top of 3500 rpm, powered with a 1-hp motor.

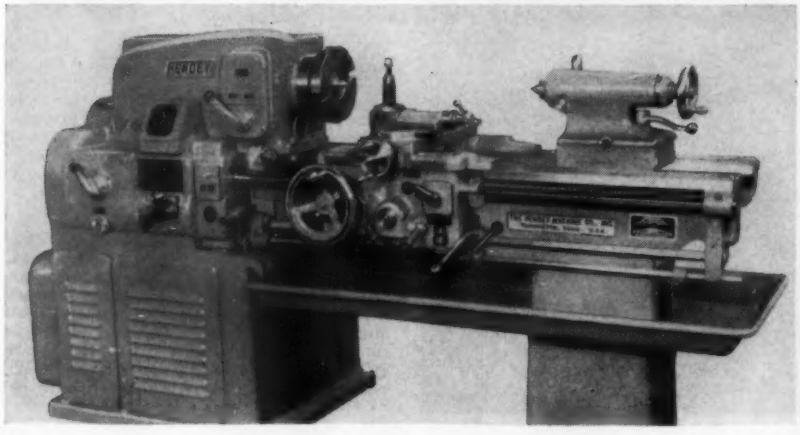


AUTOMATIC SCREW MACHINES—*Wickman Products Corp, 10325 Capital Ave, Oak Park, Detroit 37, Mich.* Capacity is ⅛, ¾, or 1 in.; high production is achieved through maximum spindle speeds of 7500 rpm and overtaking threading attachment. Incorporates six-station turret; spindle speeds of 7500-rpm max. Turret and cross slide tools are actuated by cams.

HEAVY-DUTY LATHE—*The Monarch Machine Tool Co, Sidney, Ohio.* Model 2500 swings 25 in., has clearance dia of 40 in. Larger models are 2501 and 2502. Dyna-shift control lever has three positions. In "shift", spindle rotation stops. Two dials are set for surface cutting speed and work dia. Headstock gears shift hydraulically to give correct spindle speed. 36 spindle speeds from 6 to 750 rpm. Gearbox provides range of 48 threads and feeds.

AUTOMATIC SCREW MACHINE—*The Gear Grinding Machine Co, 3901 Christopher, Detroit 11.* Screwmatic 750 has infinitely variable drive speeds to 5100 rpm, with choice of three speeds during any work cycle. Takes bar stock to 0.750 in. Stock lengths to 2¼ in. are turned with standard 7-in. cam, with lengths to 6 in. with larger cams. Turret index strokes of ¼, 1/3, and ½ seconds. Unit construction.

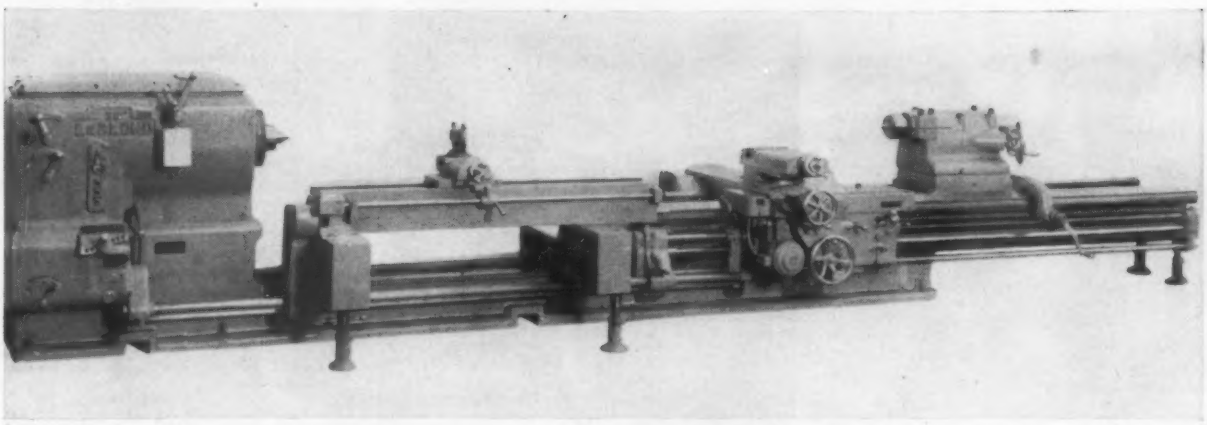




LATHES—*The Monarch Tool Co, Sidney, Ohio.* Series 61 line of engine and toolmaker's lathes includes sizes of 13, 16, and 20 in. and incorporates built-in apron-controlled power rapid traverse to the carriage and cross-slide. Longitudinal traverse, right or left, is 160 ipm; cross movement, in or out, is 75 ipm.

TURRET-LATHE STOP—*One Thousandth Stop Co, PO Box 2217, Van Nuys, Calif.* Spring-loaded, holds to 0.001 in.; fits on any lathe having multiple stop roll.

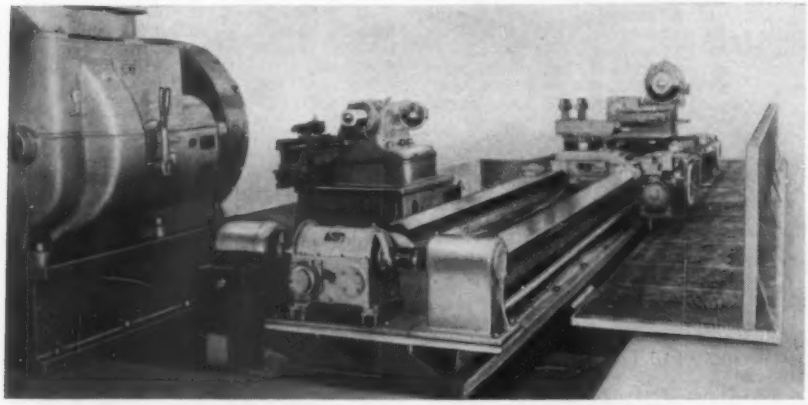
LATHE—*Hendey Machine Div, Barber-Colman Co, Rockford, Ill.* No. 2E general purpose precision lathe features infinitely variable spindle speeds with single dial control. Speeds can be changed while machine is under cut. The machine has a 14-in. swing and is available in several bed lengths.



↑ GAP LATHE—*The R K LeBlond Machine Tool Co, Cincinnati 8, Ohio.* Three models; 16/32 in.; 25/50 in.; and 32/60 in. Sliding bed is two aligned sections, upper bed movable over lower by coarse-pitch screw. Distance between centers, closed to extended, is 6 to 10 ft, 8 to 13 ft, and 7 to 12 ft, respectively. Spindle speeds are 11 to 673, 5 to 600, and 5 to 500, respectively. Feeds are 0.0025 to 0.152, 0.004 to 0.250.

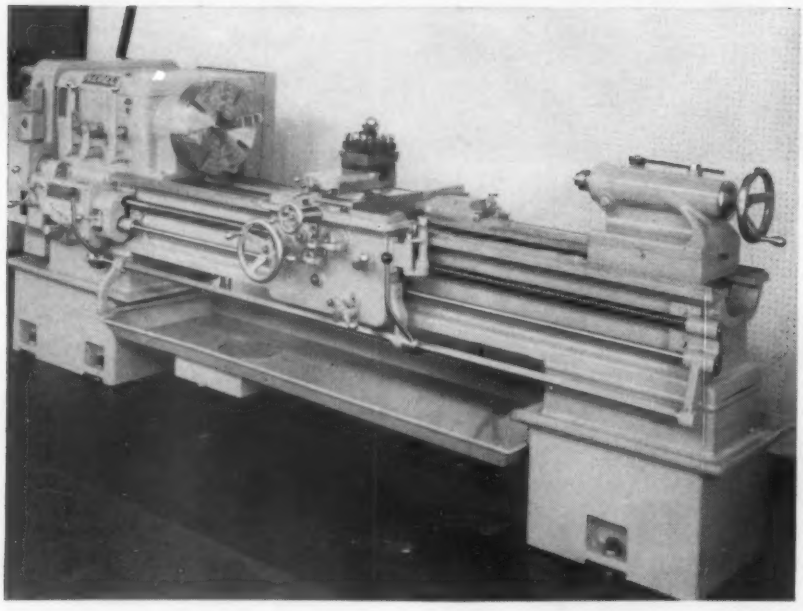
HEAVY-DUTY ENGINE LATHE—*R K LeBlond Machine Tool Co, Cincinnati 8.* 32-in. swing lathe has 125-hp drive motor, infinitely variable speeds from 42 to 1400 rpm, 56 feeds, from 0.002 to 0.250 ipr. Tests on this lathe showed 118 hp consumed at toolpoint, cutting SAE 1045 at 205 sfpm.

TURNING, GRINDING MACHINE—*Frauenthal Div, Kaydon Engineering Corp, Muskegon, Mich.* 3100 Series machine includes four table sizes of 36, 42, 48, and 52 in., all with 60-in. swing. DC drive provides infinitely variable electronic potentiometer-controlled table speed up to 175 rpm. Horizontal and vertical feeds are hydraulically actuated to provide infinitely variable feed rates.



GEARED-HEAD LATHE — *Sheldon Machine Co, Inc, 4258 N Knox Ave, Chicago 41.* Sebastian 13-in. machine has "zero precision" tapered roller spindle bearings, 1⅜-in. spindle hole, automatic oiling system, cam-action tailstock clamp, and easy-shifting spindle-speed dial. Longitudinal and cross feeds are powered, eight spindle speeds are from 35 to 860 rpm with 1725-rpm motor.

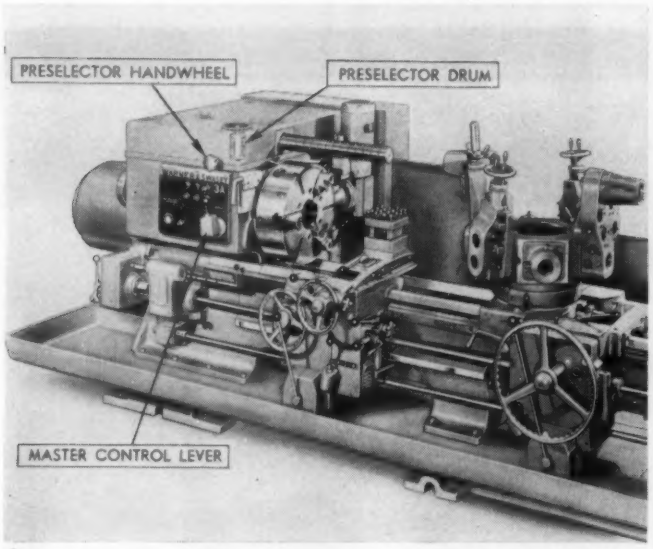
← MASSIVE PIT LATHE—*Simmons Machine Tool Corp, Albany, NY.* Built for Lukens Steel Co, Lukens fabricated a 17-ton, 42-ft-long steel weldment for bed. Simmons rough-ground, planed, and finished-ground the ways to 0.002-in. Machine can handle steam-jacketed dryer rolls of up to 14 ft in dia with 30 ft centers.



MAGAZINE ATTACHMENT—*The Alco Tool Co, 152 Birdseye St, Bridgeport 4, Conn.* For B&S automatic screw machines; permits second-operation work to be performed semi-automatically. Consists of magazine for holding and carrying work to chuck, cams, form tools, and chuck with ejector and inserting tool.

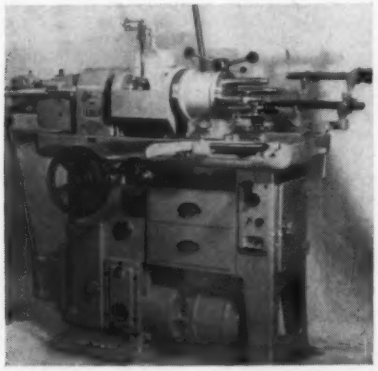
GEARED-HEAD LATHES — *Cincinnati Lathe & Tool Co, Cincinnati 9, Ohio.* Swing 21½ and 26 in.; 12 spindle speeds in geometric progression; 54 thread and feed changes through totally enclosed, automatically lubricated quick-change gear box. Also Tray-Topette, low-cost 12½-in. model.

← 16-IN. ENGINE LATHE—*The Nebel Machine Tool Co, Cincinnati 25, Ohio.* LA Series' headstock has shaved and hardened gears throughout, larger Timken anti-friction bearings, short shafts, wider gears. Capacity is 18½-in. swing, 24-in. center distance with 6-ft bed. Medium-duty unit uses 7½- or 10-hp main drive motor; has 12 or 24 spindle speeds, 13 to 750 rpm.



TURRET LATHE—*Warner & Swasey Co, 5701 Carnegie Ave, Cleveland, Ohio.* Model 3A has greater power to permit taking advantage of improvements in tooling, cutter design, and cutter materials; more speeds with smaller increments; and automatic hydraulic gear shifting. It has 4½- or 6-in. round bar capacity and swing is 23½ in. The headstock incorporates a 16-speed hydraulic-shift preselector head. Hydraulic pressure is directed to proper shift cylinders as determined by preselector valve, and shifting of gears is accomplished hydraulically. After the shift, master control lever automatically snaps "out" to normal run position.

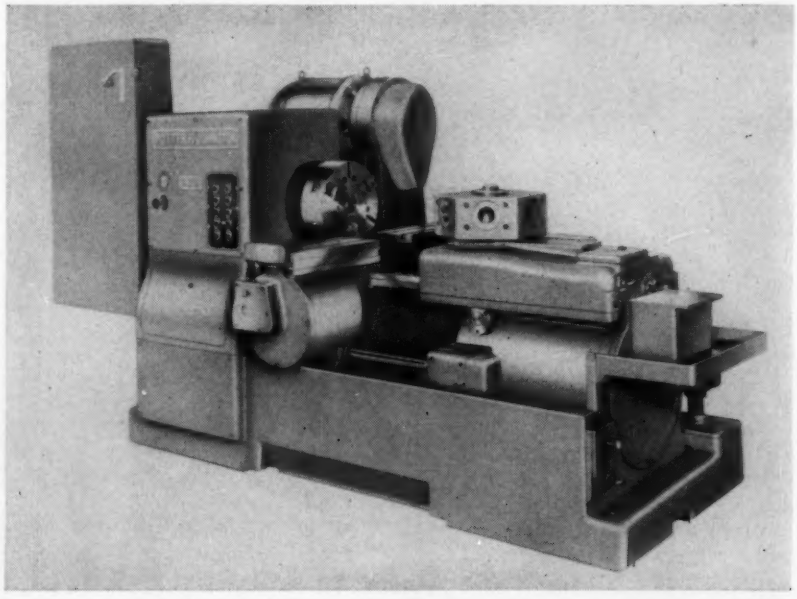
TURRET LATHE—*Epic, Inc, 154 Nassau St, New York 38, NY.* The ¾-in. "Little John" turret lathe has a 10-in. swing and infinitely variable spindle speeds from 290 to 1750 rpm. The turret slide has six automatic stops and can be supplied for manual or power feed. The cross-slide, provided with front and rear toolpost, can be either rack operated or screw operated on the saddle, manual or automatic feed.



TURRET LATHE—*Guthery Machine Tool Corp, 130 W 42nd St, New York 36, NY.* Leinen Model SR-26-RG features eight-position turret. Automatic longitudinal power feed is provided as well as reducing and reversing mechanism for threading, tapping, and reaming. Max collet capacity is 1 1/32 in.; max turning length, 4 5/16 in.; max chucking diameter, 2 5/32 in.

VERTICAL TURRET LATHES—*The Bullard Co, Bridgeport 2, Conn.* Cut Master 75; six machines with capacities ten inches apart, ranging from 26 to 76 in. All have sixteen feeds from 0.00065 to 0.125 in. The optional ram head swivels 30° left or right of center; side head is non-swiveling. The hydraulic shifter unit makes it possible to control all functions from a single, movable pendant station.

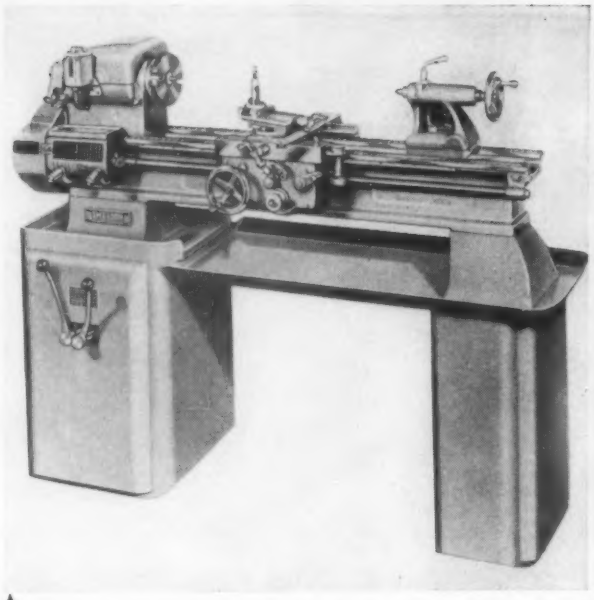
ELECTRIC POWER FEED — *Oster Mfg Co, 2057 East 61st Place, Cleveland 3.* Turret feed rates are adjustable independently of spindle speed by electric power feed unit adaptable to new and old Oster turret lathes. Small dc motor (1/15 hp, 1750 rpm) drives carriage rack pinion and can be disengaged for manual operation. Control is by selenium rectifier and variac. Feeds are variable from 1.40 to 20.00 ipm.



LATHE DRIVE—*Lincoln Industries, 1121 South 7th St, Minneapolis, Minn.* For ram-design turret lathes, with automatic reciprocating action to clear chips in deep-hole drilling. Lynn Recipromatic hydraulic drive provides automatic cycle.

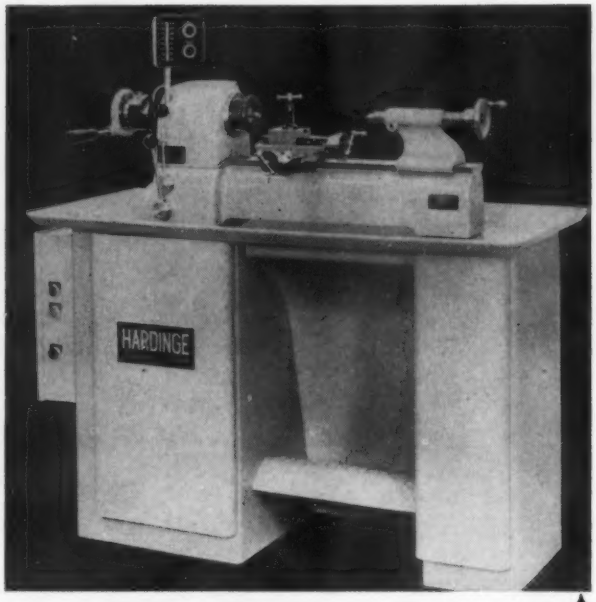
INDICATOR STOP—*D-S-C Machine Co, 27 Bertel Rd, Mount Vernon, NY.* Aid in duplication of machined parts. Sure-Stop has range of 0.150 in. and is graduated in 0.001 in. spaced ¼ in. apart.

AUTOMATIC TURRET LATHE—*Potter & Co, Pawtucket, RI.* Model 4U has four automatic speed changes provided by multi-disk friction clutches, electro-pneumatically controlled by adjustable dogs. Spindle speeds ranging from 45.5 to 1177 rpm are obtained through pickoff gears. Large, 6-faced turret is indexed with Geneva movement; slide, with a travel of 12 in., 8 in. of which is feed, is adjustable along base way. Six automatic feed changes permit range of 0.002 to 0.163 in. per spindle rev. Motor is 25 hp.

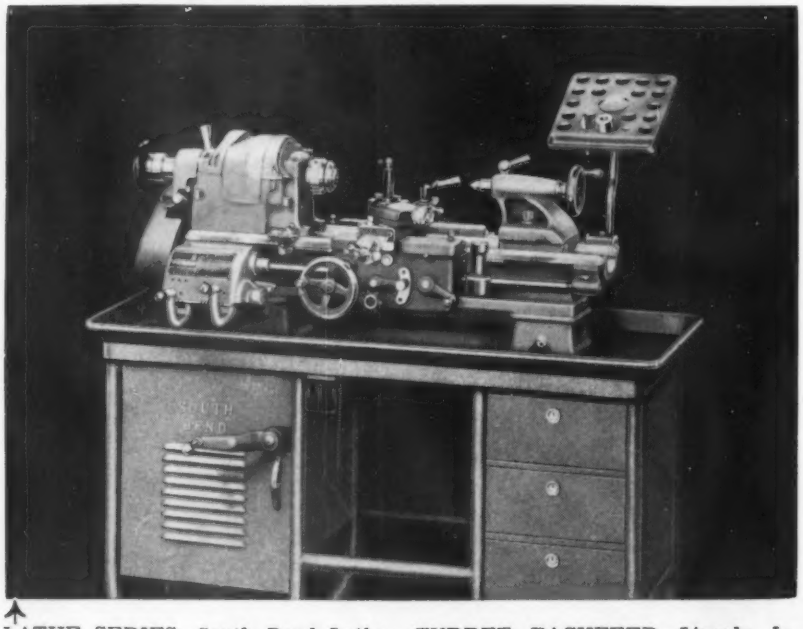


PEDESTAL LATHE — *Sheldon Machine Co, Inc, 4258 N Knox Ave, Chicago 41.* Swings of 10, 11, 13 in., with 54 pitches and rapid feed and pitch change which can be made while machine is running. Tapered roller bearings support spindle.

LATHE CONVERTER—*Master Manufacturing Co, Ave A & Easley St, Hutchinson, Kan.* 5-hp capacity; heavy-duty milling unit for use on lathes of 24-in. swing and larger. Basic unit provides at least twelve spindle speeds.



VARIABLE-SPEED LATHE — *Hardinge Brothers, Inc, Elmira, NY.* Pushbutton control gives instantly variable speeds from 230 to 3500 rpm. Changes are given by pushing "faster" or "slower" button until desired speed is reached. Indicator shows exact speed at all times. Ball-bearing collet closer permits operator to open or close collet while machine is running or stopped. Collet capacity, 1 1/16 in.



LATHE SERIES—*South Bend Lathe Works, 425 E Madison St, South Bend 22, Ind.* Improvements on 10-in. lathe series: Increase of spindle speeds from 12 to 24 by use of a 2-speed motor; wide screw-cutting range standard on 1-in. collet capacity lathes; micrometer collars on cross-feed and compound rest screw controls.

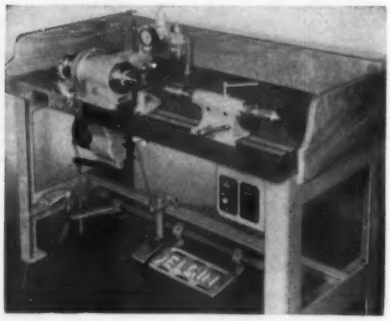
TURRET BACKFEED—*Lincoln Industries, 1123 S 7th St, Minneapolis 4.* Backfeed applied to any turret station with Lynn hydraulic drive. Infeed and backfeed rates independent, permitting roughing cut going in, and finishing cut coming out.

SLING LATHE—*Stark Tool Co, Waltham 54, Mass.* Model 2 lathe has 22-in. bed. Swing is 5.905 in.; max collet capacity, 5/16 in. Max spindle speed, 18,000 rpm. Speed ranges are 600 to 5000 rpm, and 1200 to 10,000 rpm. Overall length, 24 in.

CABINET LATHE—*Delta Power Tool Div, Rockwell Mfg Co, 438 N Lexington Ave, Pittsburgh 8.* Variable-speed lathe has 24-in. capacity between centers, with 1-in. collet capacity. Patented back-gear shift lever eliminates need for wrenches, pull-out pins, and so on. Speed range is from 44 to 1550 rpm, infinitely variable. Feed range from 0.0902 to 0.0016 in. longitudinal, 0.0301 to 0.0005 in. across.

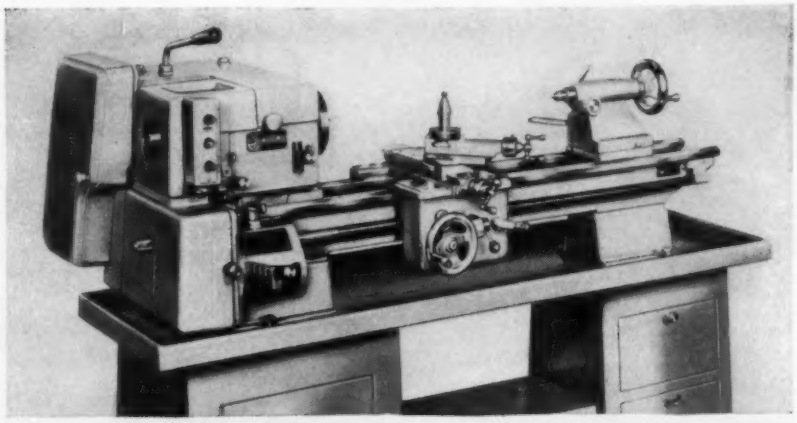
AIR-FEED LATHE — *Elgin Tool Works, Inc, 1771 Berteau Ave, Dept E, Chicago 13, Ill.* Carriage is pneumatically-hydraulically powered in automatic cycle. Headstock spindle, capable of 4000 rpm, has pre-loaded ball bearings.

POWER RAPID TRAVERSE—*Nebel Machine Tool Co, Cincinnati 25, Ohio.* For all Nebel engine, removable block gap, and extension bed gap lathes. Operates carriage at approximately 45 fpm.



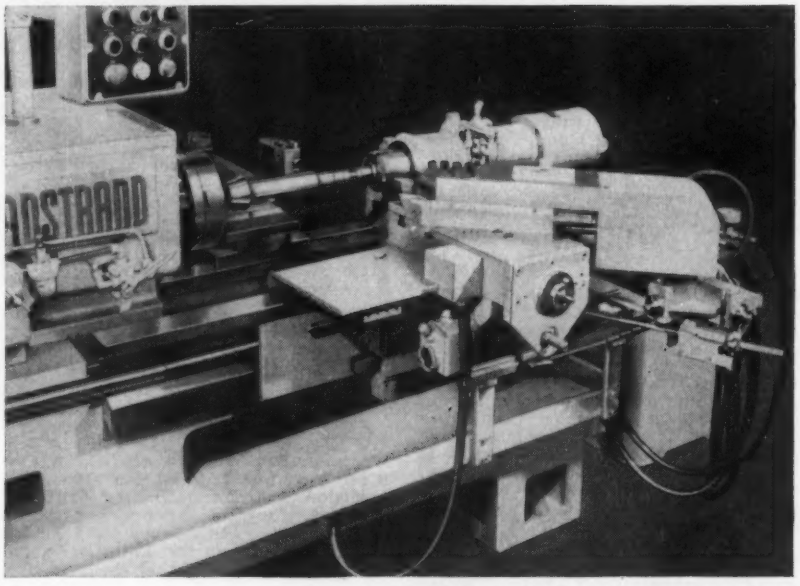
DESK MODEL LATHE—*Elgin Tool Works, Inc, Dept E, 177 Berteau Ave, Chicago 13.* Operating lever and pedals placed for fast action. Permits instant run-stop and collet position control for short turning, facing, crimping, and similar operations. Has a 7-in. swing, 15 in. between centers, speeds to 4000 rpm.

LATHE — *Clausing Division, Atlas Press Co, 5304 N Pitcher St, Kalamazoo, Mich.* Model 5300 has 1-in. collet capacity, heavy-duty No. 3 MT tailstock with tang socket, 12-in. swing, twelve speeds, 9-in. cross-slide travel, and 2¾-in. toolpost travel. Other features include: instant selection of 48 threads or feeds, automatic apron with splash lubrication, oil flinger spindle bearing lubrication, steel cable V-belt drive.

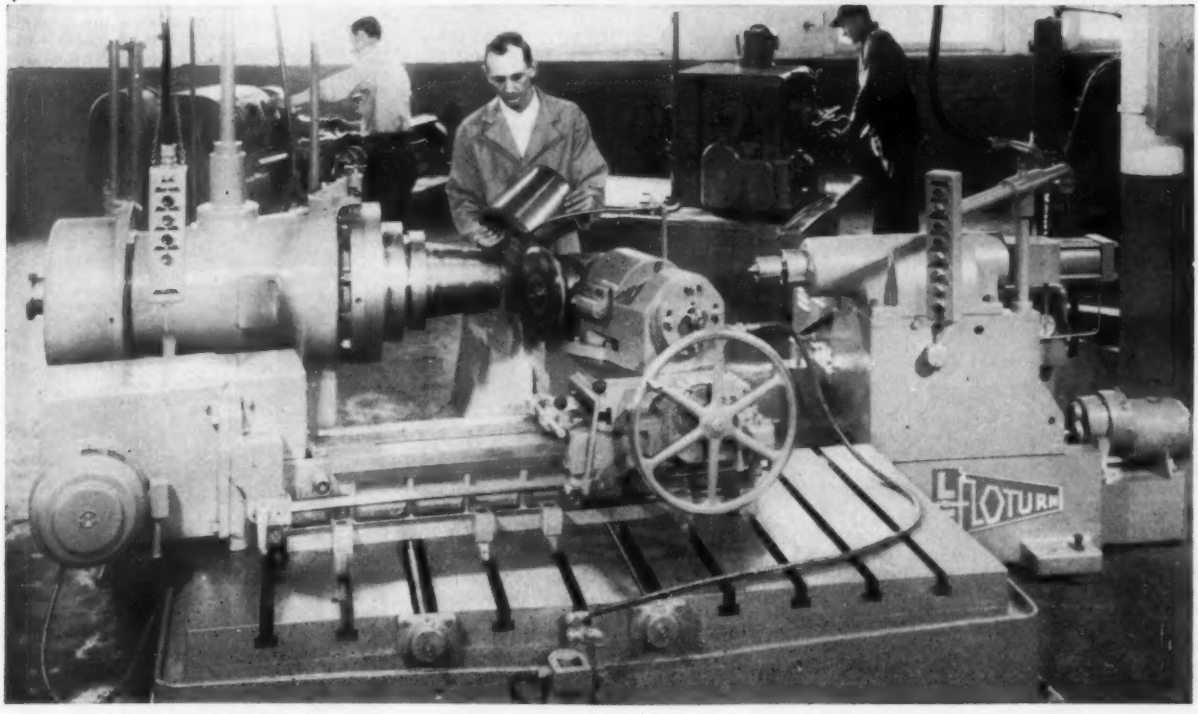


CONTOURING LATHE — *Eric R Bachmann Co, 27-11 41st Ave, Long Island City, NY.* Loewe DP 604 has 20-hp drive motor, and electro-hydraulic controls. Front compound rest can be used as copying slide rest or multiple tool rest without resetting. Rear support is independent, with air-operated tailstock. Semi-automatic sequencing. Smaller model, DP 506 has carriage for longitudinal turning, and rear slide for downcutting.

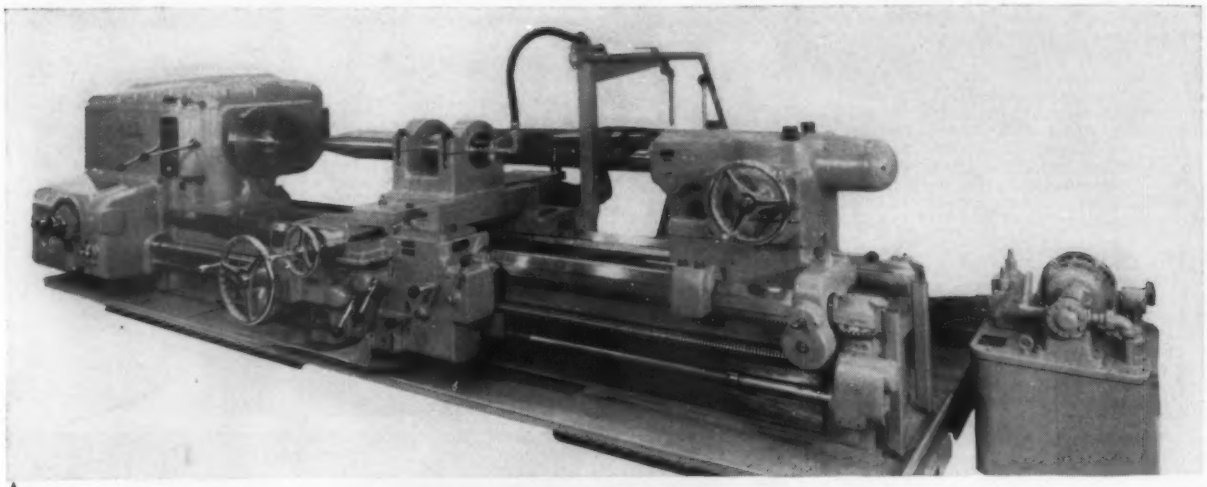
TRACER CONTROL — *Sundstrand Machine Tool Co, 2531 Eleventh St, Rockford, Ill.* For multi-cycle single-point turning of irregular shapes, Sundstrand automatic lathes can be provided with a templet-controlled tracing slide.



CONTOUR LATHE — *The Lodge & Shipley Co, 3055 Colerain Ave, Cincinnati 25, Ohio.* Uses a 68-70 Rc hardened roller to form shapes symmetrical about a common axis from flat or preformed blanks to 42-in. dia; two sizes provide 24- and 50-in. travel of forming-roll carriage. Floturn lathe is similar to power spinning lathe, in that it forms the blank against a revolving mandrel. But pressures applied by the forming roll are considerably in excess of those employed for conventional spinning operations. Spindle is driven by 20-hp adjustable speed motor through V-belts. A motor-generator set and control panel give spindle speeds from 333 to 1000 rpm at constant horsepower, and from 33 to 333 rpm at constant torque.



TURNING



TRACER CONTROL LATHE—*The American Tool Works Co, Pearl St at Eggleston Ave, Cincinnati 2, Ohio.* Combination unit for boring and turning work with irregular contours as deep as 8 in. on a side. Basis is 25-in., 50-hp Pacemaker with hydraulically actuated cross-slide which follows contour of flat work templet.

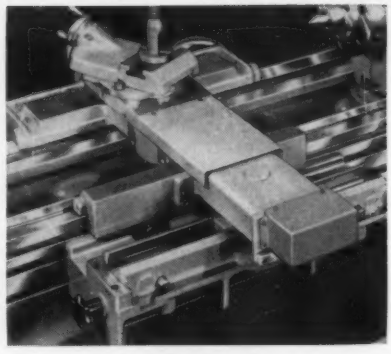
ROLL DUPLICATING LATHE—*The American Tool Works Co, Pearl St at Eggleston Ave, Cincinnati 2, Ohio.* Hydraulic roll duplicating lathe has electrical device working off templet which automatically selects the correct operating cylinder and makes change from one cylinder to the other. Contacting buttons are located at predetermined points on templet. Automatic feature is in addition to manual control. Lights change automatically when actuation of cylinder is changed from one to the other.

TRACER-CONTROL LATHE — *Rockford Machine Tool Co, Dept A, Rockford, Ill.* All-geared head, 18-in. engine lathe having 12 spindle speeds, 32 feed changes, and bed lengths from 6 to 12 feet. 5-hp motor; spindle speeds to 1140 rpm. Tracer valve is mounted on overarm. System operates at 400 psi, develops holding force of 1650 lb.

POWER CHUCK WRENCH—*Warner & Swasey Co, 5701 Carnegie Ave, Cleveland.* Unit for Models 1A, 2A, 3A, and 4A heavy-duty turret lathes. Electric motor operating through control torque clutch allows chucking heavy forgings with little operator effort.

ROTATING TEMPLET DRIVE—*The Sidney Machine Tool Co, Sidney, Ohio.* Incorporated in Sidney fluid tracer lathe for use in work where radial contours as well as axial contours are required. Addition of rotating templet drive does not prohibit use of standard tracer control.

HYDRAULIC TRACER UNIT—*Axelson Manufacturing Co, Div Pressed Steel Car Co, 6160 S Boyle Ave, Los Angeles 58.* Trace-O-Matic converts Axelson general-purpose lathes into contouring production machines. Parts are duplicated from flat templets; stylus exerts a few ounces of pressure.



TAPER ATTACHMENT — *Pratt & Whitney, Div Niles-Bement-Pond Co, West Hartford 1, Conn.* For Model C precision toolroom lathes of Pratt & Whitney. Permits taper cuts of 20° included angle (4-in. taper per ft) and 15 in. in length on the 12-in. lathe, or 18 in. on the 16-in. lathe.

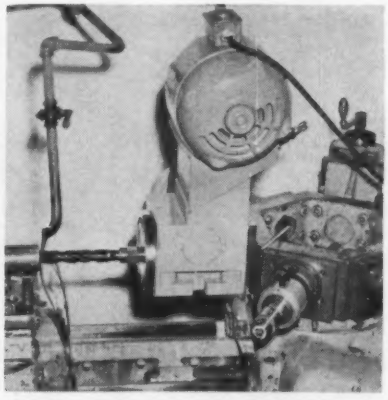
ANGLE AND SURFACE PLATES—*Beaver Industries, 1500 W Adams St, Chicago 7, Ill.* For rescraping the dovetail cross-slides, vertical slides and turret slides of B&S automatic screw machines. Complete set includes flat surface plate, dovetail angle plate, two hand scrapers, tube of "high-spot blue," and wooden box.

LATHE TRACER TOOL — *Lehigh Foundries, Inc, Air Control Div, 1500 Lehigh Drive, Easton, Pennsylvania.* Model M 1500; adaptable to medium-size lathes. It is all mechanical; lathe compound is removed and tracer tool mounted directly on cross-slide. Positive contact between stylus and ¼-in. templet is provided by air pressure applied through pressure regulator and four-way valve.

PROFILE TRACERS—*Turnomat Co, Inc, Brockport, NY.* Turn-Mat machines and lathe attachments are reported to solve production problems involved in turning long and slender parts, with multiple diameters and forms, to close diameters and run-out tolerances with fine surface finishes. Bar stock, round, square, and hexagon from 1/32 to 3½ in. in dia can be turned, formed, and sized to unlimited lengths, diameters, straight or taper to micro-finish within tolerances of 0.0005 in.

DUPLICATING ATTACHMENT—*Acc-U-Mat Machine Co, 40 Exchange Pl, New York 5, NY.* Automatic, hydraulic lathe-copying attachment claims trace-follower accuracy of 0.0002 in. with tracer pressure of 3½ oz. Fits standard 16-to 24-in. lathes and will handle lengths to 120 in. Suitable for OD, ID, shoulders, chamfers, and compound radii.

TURRET DRIVE—*Kwick Tool & Mfg Co, 201 Sexton Bldg, Minneapolis.* Drive is adaptable to any six-station turret. Powered by hydraulic fluid motor attached to capstan wheel. Rapid approach max, 330 ipm. Feed infinitely adjustable from 0 to 120 ipm on each station. Individual dwell control, quick return, and controllable index.



DRILLING ATACHMENT — *Master Manufacturing Co, Ave A & Easley St, Hutchinson, Kan.* Mounts on turret tool station and provides motorized spindle. Available in three sizes from ½ to 3 hp. Twelve spindle speeds in three speed ranges: 25 to 250, 50 to 500, and 100 to 1000 rpm.

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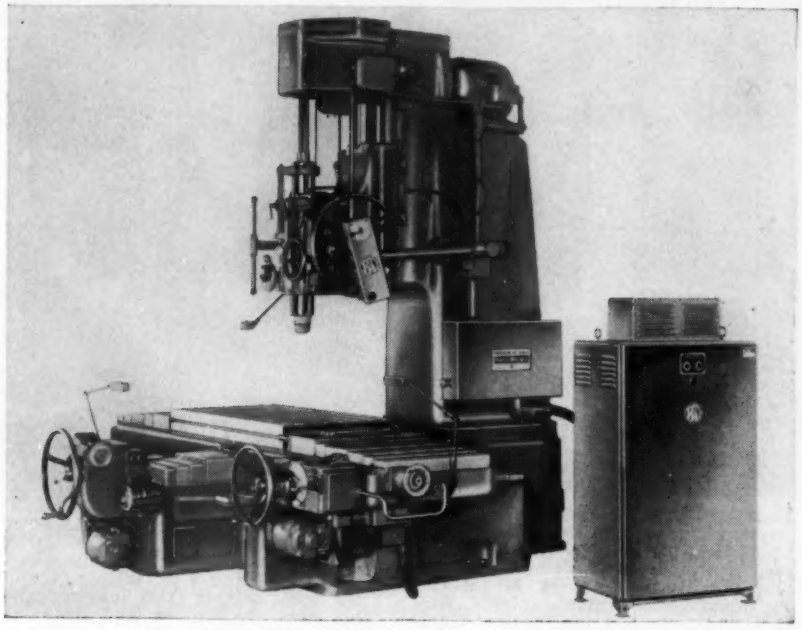
BORING

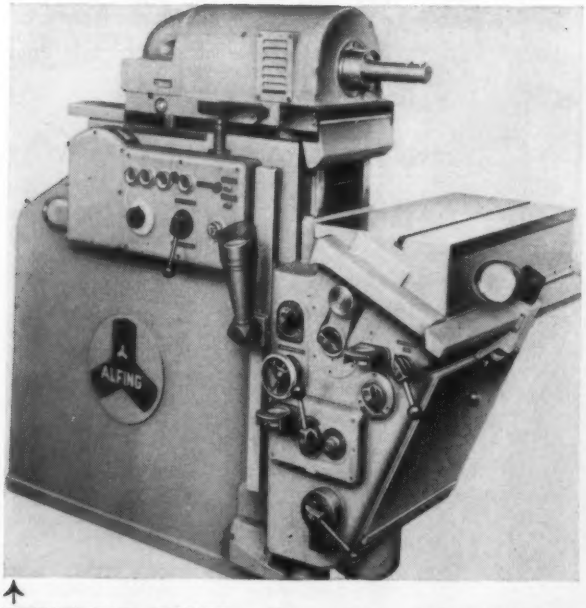
summarized from descriptions published during 1954



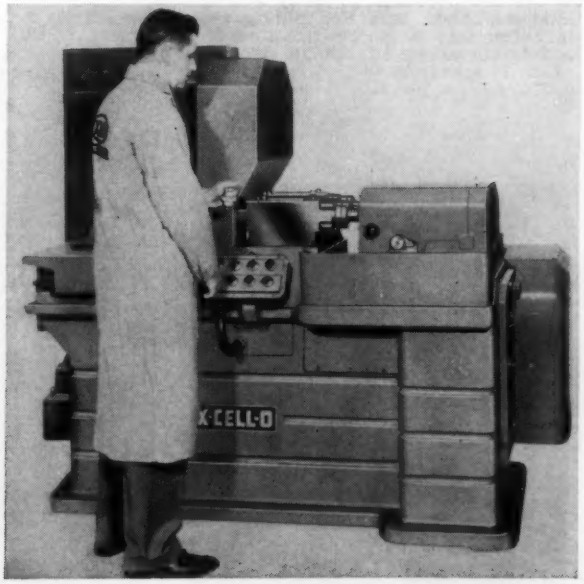
JIG BORER—*Pratt & Whitney, Div Niles-Bement-Pond Co, West Hartford, Conn.* 3E, 13-ton Electrolimit, for locating, boring, milling, and checking, has 28 x 56-in. table. Table travel is 48 in. longitudinal, 30 in. transverse. Max height between table and spindle is 30 in. Milling feeds are controllable in infinite steps from 1 to 15 ipm, with rapid table feed of 60 ipm. Eight spindle feeds give range between 0.0005 and 0.015 ipr; spindle speeds from 30 to 1500 rpm.

JIG BORER—*Amitool, 629 Main St, Westbury, NY.* Sima machine is reported to have max accumulative error of 0.0006 in. on longitudinal and cross travel. 16 spindle speeds range from 35 to 1500 rpm. Throat is 14 in.; spindle nose distance from table surface, 0 to 20 in.

BORING MACHINES — *Simplex Machine Tool Corp, 4548 W Mitchell St, Milwaukee 46, Wis.* Simplex 2BA mechanical-automatic-feed machine. Cycle is accomplished by means of limit switches. Feed changes through gears; feeds from 1½ to 13½ ipm.



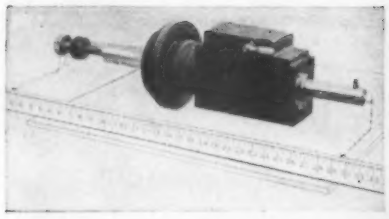
UNIVERSAL BORER — *Morey Machinery Co, Inc, 383 Lafayette St, New York 3, NY.* Height of knee and cross adjustment of table are combined with optical reading device for accurate setting. Feed movement of headstock slide and longitudinal traverse of cross slide are hydraulically controlled. Feed of headstock slide is infinitely variable from 0.236 to 12 ipm. Spindle speed within range of 300 to 3000 rpm.



JIG BORER—*Manufacturers Associates, 92 Liberty St, New York 6, NY.* Has maximum boring capacity of 10¼ in.; maximum diameter drilled in solid steel is 1 in. The distance from the center of spindle to column throat is 13 in.; range of feeds, independent of spindle speed, is 0.004 to 0.2 in. per sec. Low spindle speed ranges from 60 to 380 rpm and high ranges from 360 to 2200.

PRECISION BORER—*Ex-Cell-O Corp, Detroit 32.* Style 312 is cam-operated, for precision contouring, boring, turning, facing, and grooving. Accommodates parts that can be rotated on one or more spindles while non-rotating tools are supported on cross-slide. Parts can be inspected by checking only one dimension because accuracy and relationship of other dimensions are determined by cams.

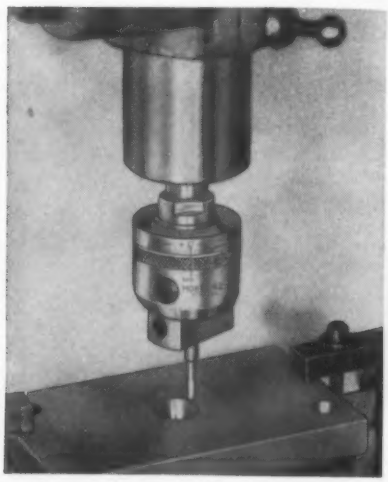
BORING



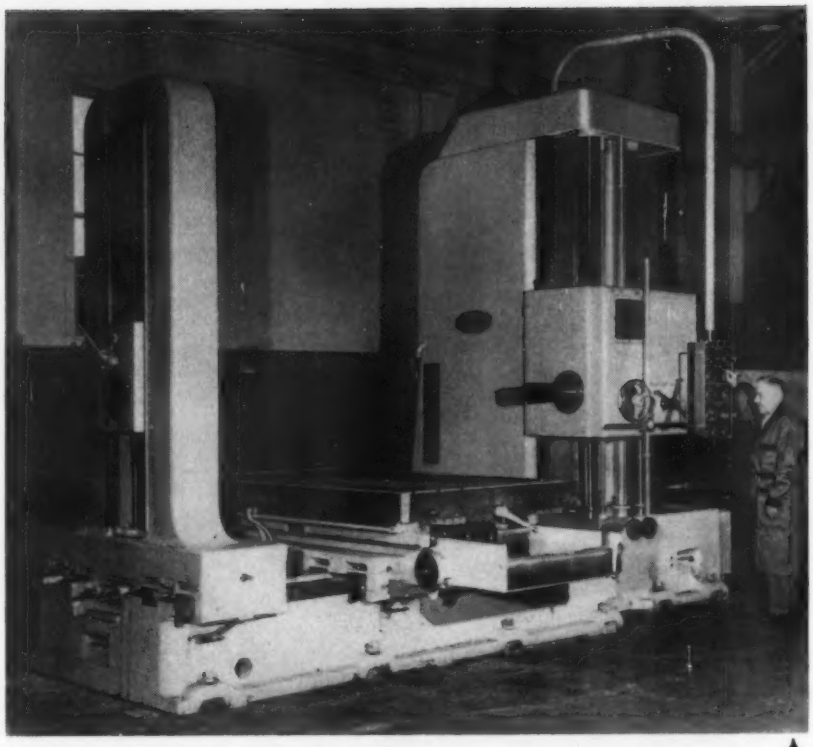
BORING MACHINE—*The Hydro-Borer Co, 1601 E Olympic Blvd, Los Angeles 21, Calif.* Model S-6 has bore-diameter from ⅜ in. to 6½ in. with travel length of 6 in. Because the taper in the spindle is eccentric, bore diameter can be increased 0.014 in. in increments of 0.001 in. without resetting the tool. Feed is 0.004 in. and can be reduced to 0.002 in.

HORIZONTAL BORING MILL—*MBI Export & Import Ltd, 475 Grand Concourse, Bronx 51, NY.* Dixi 60 with optional microscope controls has built-in rotary table and can machine long bores with long boring bar and end support or cut deep holes while keeping overhang of boring bar constant. Hydraulic feeds range from 0 to 78 IPM and spindle speeds are continuously variable within two ranges from 30 to 220 and 180 to 1200 rpm.

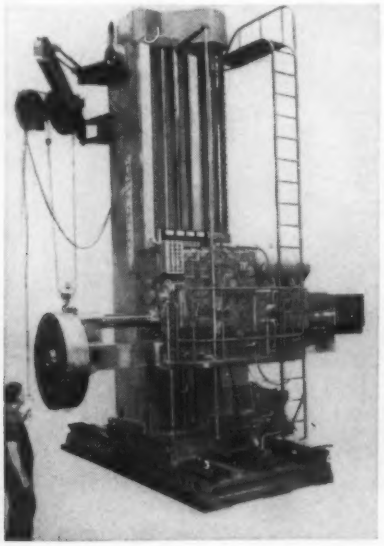
BORING MACHINE—*Marac Machinery Corp, 1819 Broadway, New York 23, NY.* BMAG Model KBF2 features automatic location of spindle over 50x 30-in. table. While one bore is being machined the next location is preset and the spindle moves on cross-slides to the new location. Capacity is 2-in., mild steel 10-in. bore. For milling, 4¾-in. cutter may be used with automatic coordinate setting off. Spindle stroke is 13 in; 18 speeds 35 to 1800 rpm; feeds, 0.45 to 2.5 mm per rev.



BORING HEAD — *Precision Tool & Mfg Co, 1305 S Laramie Ave, Cicero 50, Ill.* Offset dove-tailed toolholder slide is moved by micrometer screw for rough location of tool on jig-boring job. Scale on OD allows tool adjustment to 50 millionths on radius.

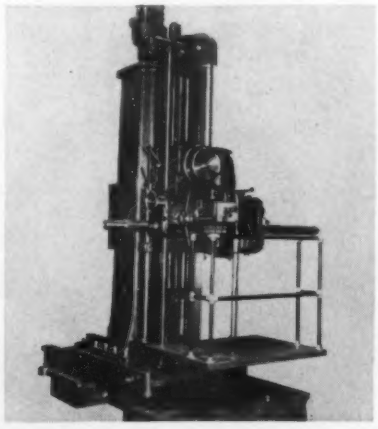


BORING MILL—*The Innocenti Corp, Room 7512, 350 Fifth Ave, New York 1.* Floor- and planer-type with horizontal feed of headstock. Three models of different capacity. Smallest, Model 140/95: longitudinal travel—spindle, 39⅜ in.; headstock, 15¾ in.; vertical travel of carriage, 78¾ in. Dia of boring spindle, 3¾ in.; dia of milling arbor is 5½ in. Spindle speed from 6 to 1000 rpm.



HORIZONTAL MILLER—*Giddings & Lewis Machine Tool Co, Fond du Lac, Wis.* Improved 570 FUAR underarm is bolted to bottom of headstock; arm is encased in housing which lengthens bearing surface of headstock on column by 14 in. Specifications of machine: 7-in. spindle, 141-in. vertical headstock travel, 96-in. horizontal travel of the column, 6-in. underarm travel, 40-hp headstock motor.

HORIZONTAL BORING MILLS—*The Bullard Co, Bridgeport, Conn.* Model 75 line of table-types with spindle diameters of 3, 4, and 5 in. Wide range of head post heights, bed lengths, and table sizes. Continuous feed stroke of spindle is 28, 42, and 42 in. respectively. All functional controls are operated from a movable pendant station. Table and head feeds (16) from 0.00065 to 0.125 ipr; spindle and saddle from 0.625 to 0.120 ipm; 36 spindle speeds from 9.5 to 2032 rpm or 5.83 to 1209 rpm (two larger models).



HORIZONTAL BORING MILL—*British Industries Corp, International Machinery Div, 164 Duane St, New York 13, NY.* Kitchen & Wade machine has 2½-in. spindle which feeds out 30 in. and is supplied with 36 speeds from 8½ to 800 rpm. Eight rates of power feed from 36 to 150 cuts per inch are provided. All locking motions are operated from saddle and there is an automatic trip for depth drilling. Machine drills from solid in mild steel and bores up to 24-in. diameter.

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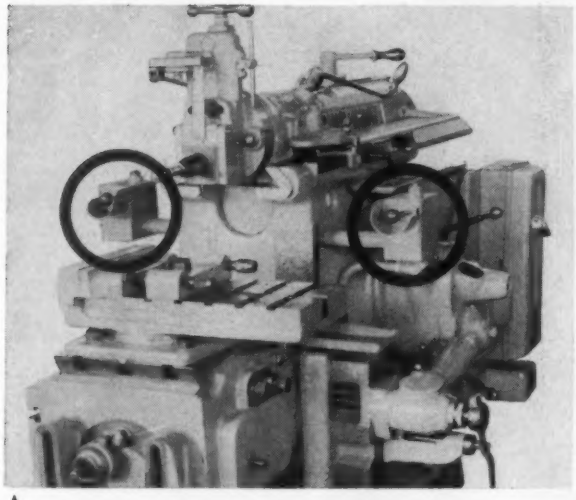
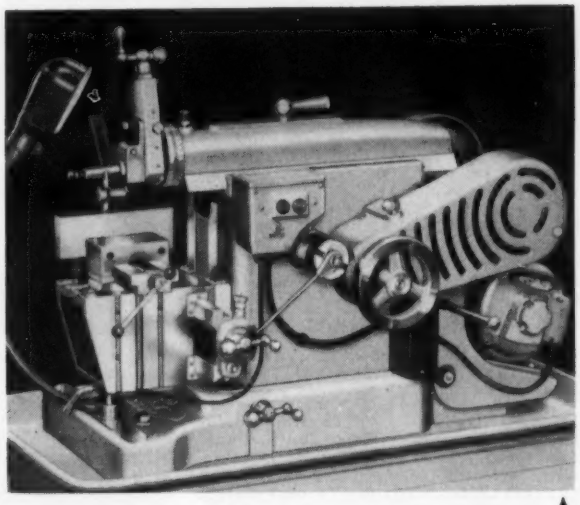
PLANING AND SHAPING

summarized from descriptions published during 1954

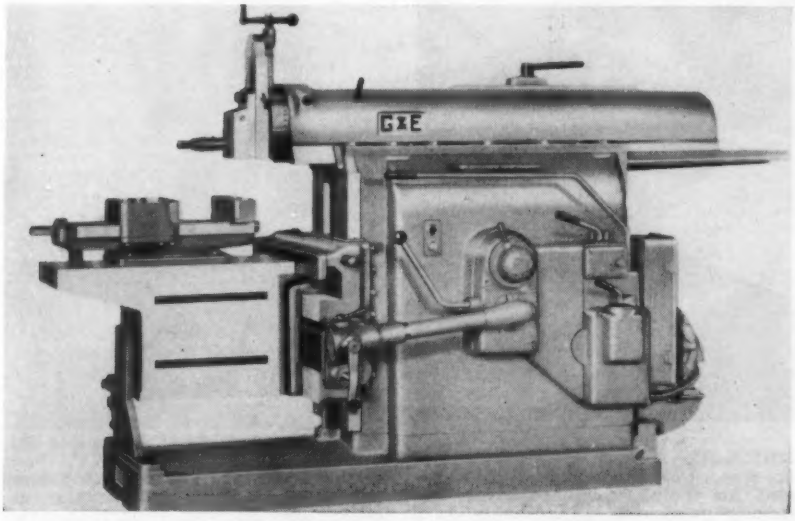


SHAPERS—*The Cincinnati Shaper Co, Hopple, Garard, & Elam St, Cincinnati 25, Ohio.* Dual control is offered as an extra feature for electromagnetic brake and clutch on Cincinnati shapers. Additional control permits more efficient handling of large work which obstructs operator's view from normal working position. Clutch itself is standard equipment. Other features: automatic tool lifter; power down-feed to head with automatic stop; auxiliary front cross-feed screw.

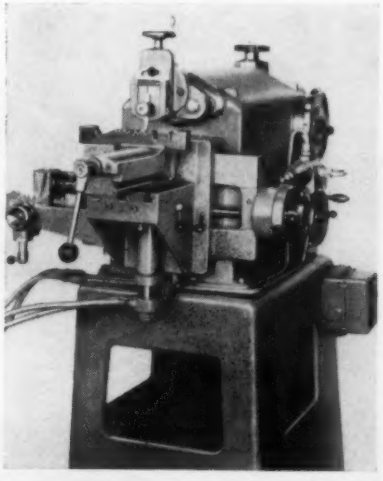


PUNCH FORMER—*Carl Hirschmann, 30 Park Ave, Manhasset, NY.* Slotter with 0.01mm limit on profile and parallelism; 33 to 81 strokes per min in steps, 2-6-in. stroke, 0.03 ips rough and 0.002 ips fine feed. Swivel motion from 0° to 90°, radius ⅛ to 2 in.; longitudinal automatic advance by hand, 0.0008 in.; rotary table dia, 8 in., rotating through 360°.

BENCH SHAPER—*South Bend Lathe Works, South Bend 22, Ind.* 7-in. model; incorporates circulating force-feed lubrication system. Important bearing surfaces receive direct and continuous oil flow. Includes enlarged T base to control vibration; top surface of T is machined to receive support shoe.



SHAPER—*Gould & Eberhardt, Inc, Fabyan Place, Irvington 11, NJ.* Chrome-plated ram V-ways are provided on all G&E shapers. Ways are machined and chrome directly applied by precision plating to uniform thickness of 0.001 in. Hardness of chrome plating is 70 R_c.



HYDRAULIC COPYING SHAPER—*American Herforder Corp, 1546 N Orleans St, Chicago 10.* Can copy at 1:1 ratio. Work may be held in quick-acting vise or between 360° indexing centers while tracer follows templet. Ram speed variable from 0 to 65 fpm. Cutting stroke length is up to 8 in. and toolhead may be swiveled 45° to either side. Adjustment of table may be set to 10 in. transversely and 6 in. vertically.

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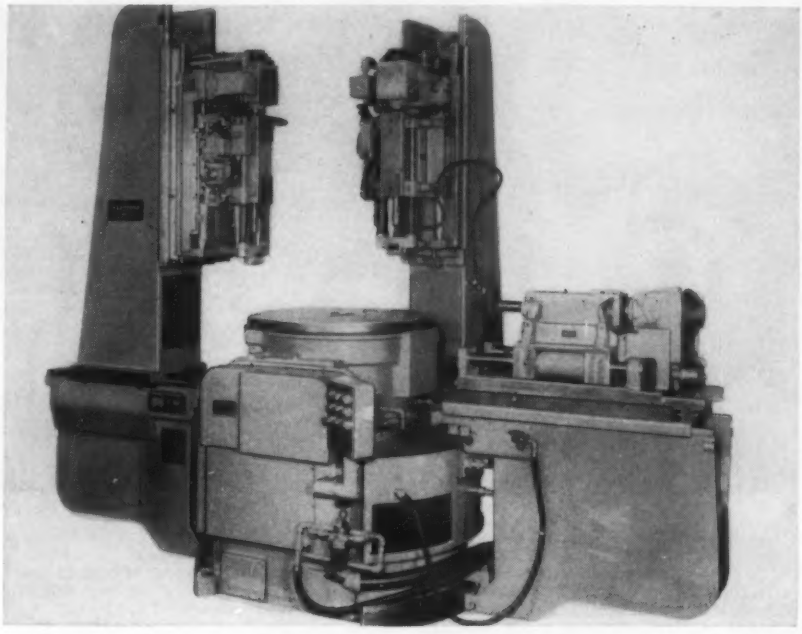
DRILLING

summarized from descriptions published during 1954

UNIVERSAL DRILLING MACHINE —*Hartford Special Machinery Co, Hartford 12, Conn.* Air-hydraulic heads on 17,800-lb machine will drill up to ¾-in. holes in mild steel and ½-in. holes in stainless. Up to 192 indexes can be made, and work capacity ranges from 30 in. to 87 in. OD. Bolt circles with dia from 8 to 65 in. can be machined. Up to 4 drilling or tapping units may be adjusted radially, vertically, and circumferentially, controlled by easily changed cams. Spindle speeds range from 180 to 6700 rpm and feeds from ½ to 40 ipm.

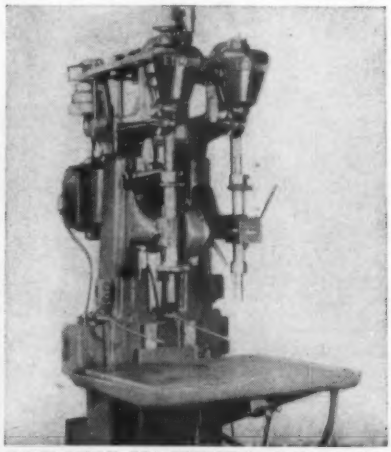


DRILLING MACHINE — *Sibley Machine & Foundry Corp, South Bend, Ind.* Model E-25 has 22 x 30-in. table, with pedestal jack to raise, lower, and support table. Capacity in cast iron, 1 in. Swing is 25 in. Spindle travel is 8 in. Variable drive is obtained from self-locking control with no belts to change. Five options for spindle speeds are available, ranging from 206-825 to 510-2160 rpm.

AUTOMATIC DRILLING MACHINE —*Hillyer Instrument Co, 54 Lafayette St, New York 13, NY.* Electro-mechanical unit takes flat stock. Hole location is found from edge of work in two directions after decimal dials on control board are set. Drill automatically locates and drills any number of holes to predetermined depth.

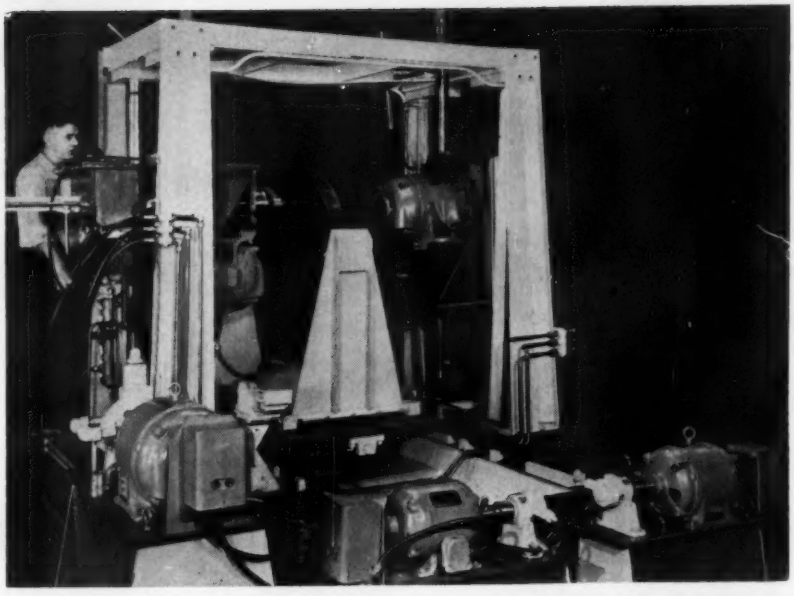
DRILL-HEAD ATTACHMENT — *Silver-King Corp, Aurora, Ill.* Multiple unit for metal, wood or plastic has infinite number of adjustments on 3 standard ¼-in. chucks within 3 to 5½-in. diameters. Each of three spindles has ¼-in. Jacobs chuck, 2 annular-shielded ball-bearing mountings, and is driven by ⅝-in. pitch roller chain.

ADJUSTABLE AUTOMATIC DRILL—*Gangdriller Machine Works, Inc, 340 Ten Eyck St, Brooklyn 6, NY.* Multi-spindle machine can be adjusted to drill, bore, or tap holes in almost any pattern on works up to 20 ft long and 36 in. wide. As many as 80 single spindles can operate simultaneously, and spindle blocks with 2 to 6 spindles are available. Spindle speed is 900 to 2000 rpm.



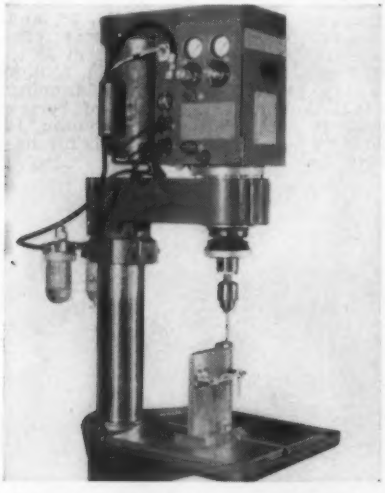
DRILLING MACHINES—*Edlund Machinery Co, Cortland 2, NY.* Four models in line of vertical-motor cone-pulley-drive drilling and tapping machines are: 1B with 7- or 12-in. overhang; 2B with 8-in. overhang; 3B with 12- or 15-in. overhang; and the 4B with 12- or 16-in. overhang. Drilling capacities are: model 1B, ⅝ in.; models 2B and 3B, 1¼ in.; model 4B, 1½ in.

MULTIPLE-HOLE DRILLING MACHINE — *Walter P Hill, Inc, 22183 Telegraph Rd, Detroit 19, Mich.* Semi-automatic hydraulically controlled machine tool was designed to speed drilling operations on medium and large size metal parts. Consists of two fabricated steel vertical structures, each supporting two columns and mounted opposite one another. Motorized power heads having integral hydraulic feeds are mounted on each vertical structure.

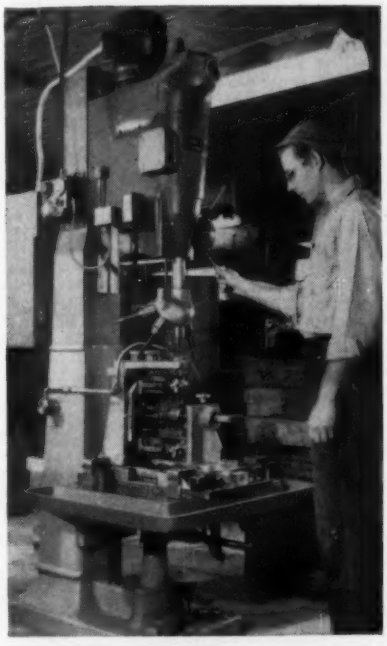


MULTI-SPINDLE DRILL — *Zagar Tool, Inc, 24000 Lakeland Blvd, Cleveland 23.* High-speed, hopper-fed, mechanically operated drillpress has 529 spindles with 30-hp motor. Gearless drillhead permits drill centers as close as ¼ in.

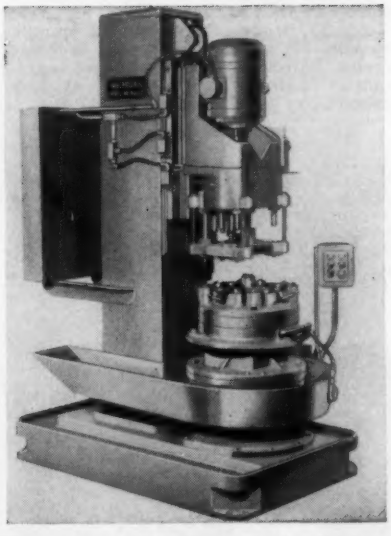
DRILLING SPINDLES—*The Electro-Mechano Co, 261 E Erie St, Milwaukee, Wis.* Complete with self-contained motor for use with special drilling, reaming, and grinding machines. Speed ranges of 1000 to 10,000 rpm, or 2500 to 15,000 rpm.



AUTOMATIC DRILL—*The Dumore Co, Racine, Wis.* Series 24 requires only two outside connections, conventional shop air and electric power. Hydraulic control accessory, optional, controlling rate of feed, drills hard materials at special angles or on curved surfaces. 10 spindle speeds from 440 to 7400 rpm. Capacity is from No. 60 drill to ⅜ in.

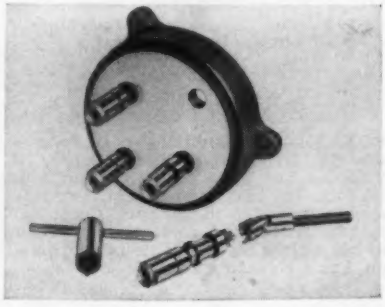


TURRET DRILLPRESS — *Howe & Fant, Inc, 26 Fitch St, East Norwalk, Conn.* Six-spindle turret indexes in any direction to any spindle. Tapping is done at twice forward speed with automatic reversal.



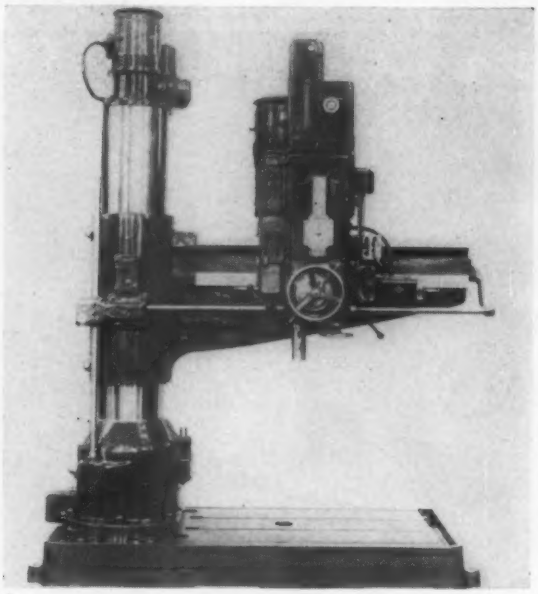
HYDRAULIC FEED MACHINE—*Michigan Drill Head Co, Hazel Park, Detroit, Mich.* Hydro 3 for small-run production. Stroke, 10-in., feed thrust, 3100 lb. Index tables of 20, 30, and 42 in. can be bored for 2 to 15 stations. Standard cycle is: rapid advance feed, positive stop, rapid return.

HIGH-SPEED DRILL HEAD—*Telematic Corp, 3338 Robertson Blvd; Los Angeles 34.* Precision head for multiple-spindle operations has air feed with hydro-check control. Unit has 2-in. stroke with fast return, and is also available on T-base with automatic air control box and electronic cycle timer.



DRILLPRESS STOP—*Richmond Machine Products Corp, 1456 S Railroad Ave, New Dorp, SI 6, NY.* Richmond Quick-stop can be adjusted up or down by finger pressure on side; fine adjustment is by turning nut. Tools are not needed, and setup time is said to be reduced from minutes to seconds.

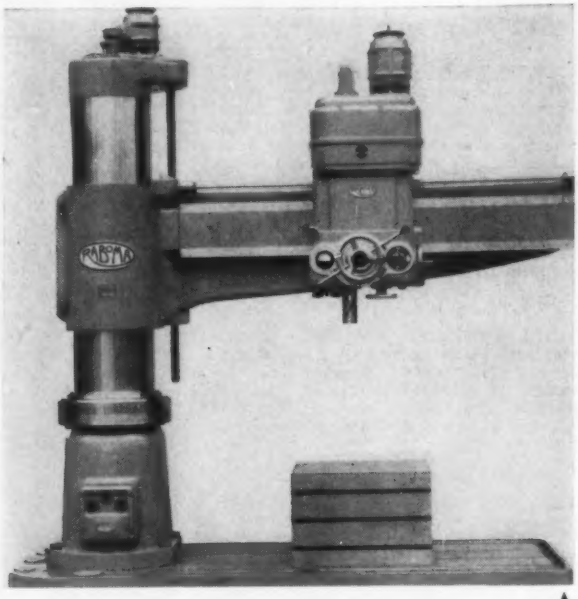
FIXED POSITION PLATE — *Commander Mfg Co, 4225 W Kinzie, Chicago 24.* Converts Multi-Drill to fixed-spindle multiple head with advantages of adjustability. From 2 to 8 spindles may be installed in the plate. Min hole centers of ½-in. to max 9 in. are possible.



RADIAL DRILL—*British Industries Corp, Dept AM, 164 Duane St, New York 13.* Model E27A has 36 spindle speeds, 8½ to 800 rpm, and 9 power feeds. Ball-bearing construction, automatic depth trip, reversible at any speed.

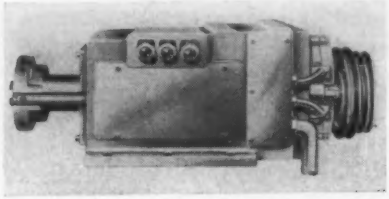
RADIAL DRILLING MACHINE—*Associated Machine Tool Corp, 535 McNeilly Rd, Pittsburgh 26, Pa.* Drills to 1½ in. in steel, taps to 1 in., has 12 speeds from 40 to 1680 or 60 to 2500 rpm. Four rates of feed: 0.033, 0.018, 0.010, and 0.0055 in. It has 5-ft arm and 11-in. column.

DRILLPRESS—*Delta Power Tool Div, Rockwell Mfg Co, 437 N Lexington Ave, Pittsburgh.* 14-in. machine has pivoting motor mount, to allow quick speed change. 4 5/16-in. spindle travel. Self-locking depth stop. 40 different models, single-spindle and multi-spindle. Price of single-spindle model: $88.50.



RADIAL DRILL — *H E B Machine Tools, 475 Fifth Ave, New York 17, NY.* Holes within 30-in. radius are positioned, drilled, and tapped rapidly. Drilling capacity is 1 in. in steel, and tapping capacity, ½ in. Spindle speeds are infinitely variable between 100 and 1880 rpm.

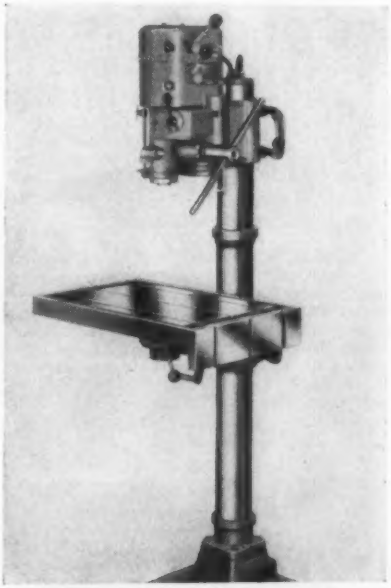
DRILLPRESS—*Kaufman Manufacturing Co, Manitowoc, Wis.* No. 75DT hydraulic combination drilling and tapping unit is a single-head machine that can be converted to automatic tapping by installation of leadscrew. Drilling capacity, is rated at one 1¼-in. hole at 0.010 ipr feed; tapping is to 1¼-in. pipe tap. Twelve forward speeds from 236 to 1328 rpm for drilling and tapping, 2000 rpm for drilling only.



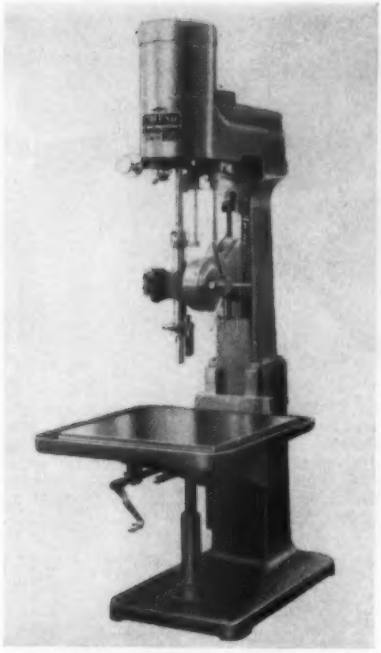
DIFFERENTIAL UNIT—*Douglas Tool Co, 2300 East Nine Mile Road, Hazel Park, Mich.* Feeds drill-spindle quill by means of twin leadscrews and a worm gear. Spindle speeds for Model BU-SR-3D range from 590 to 2700 rpm when driven by an 1800 rpm motor. The geared unit, BU-GSR-3D, has spindle speeds from 190 to 580 rpm.

BOX-COLUMN DRILL—*I O Johansson Co, 7730 Austin Ave, Skokie, Ill.* Machine has 30-in. swing, capacity to 1½ in. in cast iron. Eight spindle speeds from 125 to 150 rpm. Combined spindle travel and vertical adjustment of head gives 8½ in. Table is supported on Acme elevating screw.

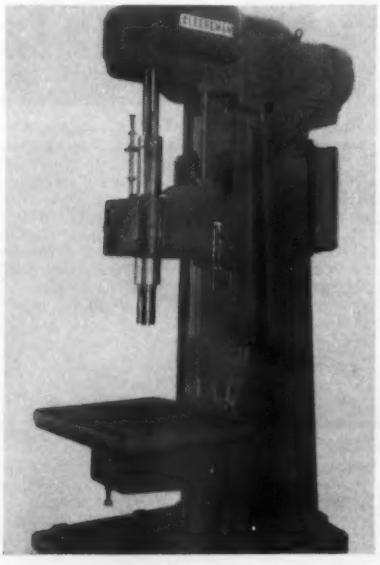
RADIAL DRILL—*Marac Machinery Corp, 1819 Broadway, New York 23.* Raboma machine has 4.5 hp and is available in three sizes, 26¼, 36, and 49½-in. head travel. Features preselective speeds and feeds from 45 to 2800 rpm, and 0.0008 to 0.040 in. Ability to tap blind holes without tapping head. Automatic clamping of boring head to arm, and arm to column, is done by pushbuttons. Elevating mechanism has automatic cycle.



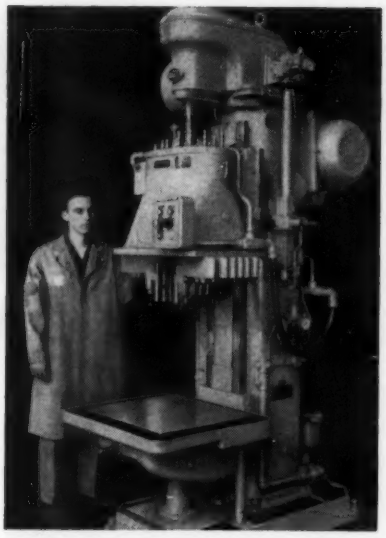
GEARED-HEAD DRILLPRESS—*The I O Johansson Co, 7730 Austin Ave, Skokie, Ill.* Provides fast speed changes accomplished by shift of gear levers while machine is running. For precision depth drilling and counterboring, it is equipped with two stops. The entire head can be swiveled 360° and securely locked in any position. Eight spindle speeds from 125 to 1540 rpm are provided through the selective gear box from the 1-hp motor.



MOTOR-SPINDLE DRILLS — *Edlund Machinery Co, Inc, Cortland, NY.* Model 2 MS has 12- or 15-in. overhang, 1 to 8 spindles, 2-hp motor, 1-in. capacity (1¼-in. with back gears), 600 to 3600 rpm speed, 115 to 900 with back gears. Model 4 MS is for 1½-in.-drill capacity. Has 12- or 16-in. overhang, 1 to 4 spindles, speeds of 450 to 1200 rpm, and 112 to 300 rpm with back gears.



DRILLING AND TAPPING MACHINES—*Cleereman Machine Tool Co, 640 W Washington Blvd, Chicago 6, Ill.* Two automatic electro-mechanical machines, pushbutton operated. Series AD machines drill, and Series ADT do tapping operations. Model AD cycle is: rapid approach, feed, rapid traverse return. Model ADT has: rapid approach, tap in, tap out, and rapid return. Speed range is approx 60 to 1725 rpm, with feed range from approx 0.003 ipr to 0.250 ipr.

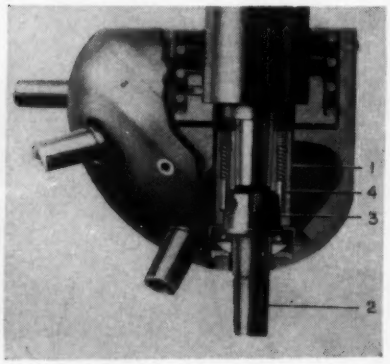


DRILLING, TAPPING MACHINE — *National Automatic Tool Co, Richmond, Ind.* With single, adjustable, or fixed center spindle head. Pushbutton control for standard, jump feed, or time delay reverse cycles.

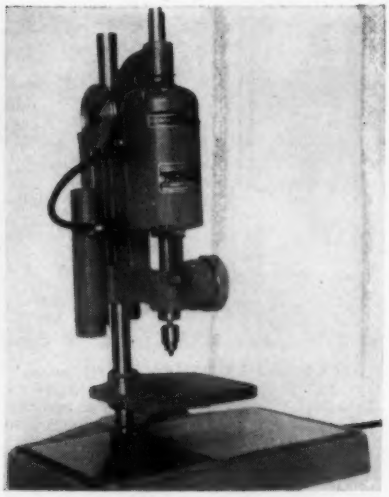
MICRO DRILL CONTROL—*Hamilton Tool Co, Hamilton, O.* Locates holes on small-hole drilling machines. Capacity, 0.004 to 0.3125 in. Speeds, 750 to 8750 rpm.

DRILL FEED—*Pneuma-Draulic Co, Box 666, Detroit 6, Mich.* Air cylinder unit attaches to drillpress spindle and operates automatically from contact switch. Pressure necessary is 40 to 60 psi.

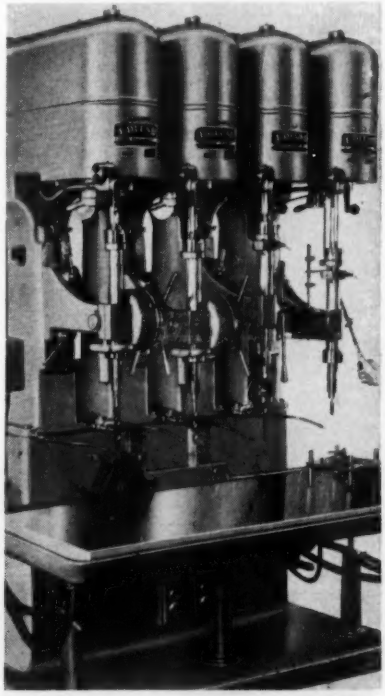
DRILLPRESS — *Alzmetall, United States Office, 30 Church St, New York 7, NY.* Model AB4, column-type, has capacity of 1¾ in. in cast iron. Incorporates magnetic starting, infinitely variable control of spindle speed, automatic feed, and optional equipment including automatic tapping.



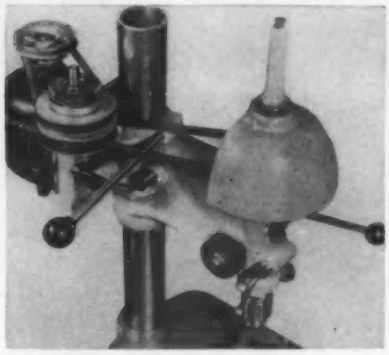
DRILL TURRET DRIVE—*Howe and Fant, Inc, South Norwalk, Conn.* Increases capacity of Lign-o-matic drill turret; makes it possible to use any tool that can be held and driven by ½-in. chuck. The Lign-o-matic is a six-spindle turret for use on standard drillpress.



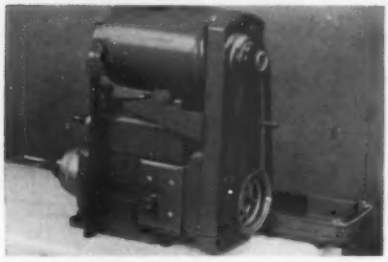
DRILLPRESSES — *Electro-Mechano Co, 261 E Erie St, Milwaukee, Wis.* 8-in. manual feed Micro Feed uses planetary roller system. Quill return counter balance has been changed from arm to pulley-and-weight arrangement. Spindle speeds range from 1000 to 10,000 or 2500 to 15,000 rpm. Motor is 0.1 hp; spindle stroke is 1 in. All models use governor control for exact drill speed, load or no load.



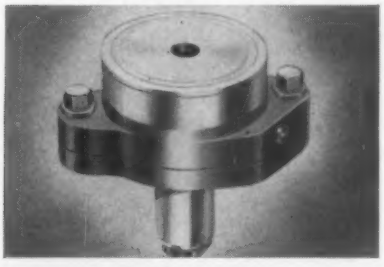
DRILLING AND TAPPING MACHINE—*Edlund Machinery Co, Cortland, NY.* Model 2F variable speed drilling and tapping machine allows the operator to select correct speeds instantly. Spindle speeds range from 200 to 3600 rpm with a low range of 200 to 1200 rpm and a high of 600 to 3600 rpm. Models with 8-in. and 15-in. overhang and from one to eight spindles are available in the pedestal-type machine; 8-in. and 15-in. overhang round-column-type machines are included in the line.



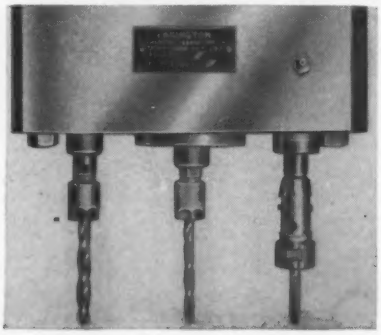
DRILLPRESS DRIVE—*Speed Selector Inc, 118-W Noble Court, Cleveland 13, Ohio.* Speed variation of 9 to 1; mounting bracket is slipped over column and V-belts of correct length are applied.

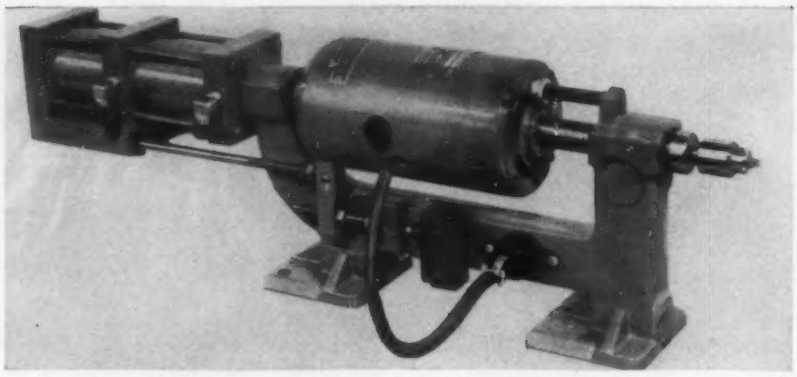


V-BELT DRIVE—*Rockwell Mfg Co, Drill Unit Div, 400 N Lexington Ave, Pittsburgh 8.* Spindle-speed range of Rockwell units is broadened by 4-step pulleys which permit 24 speeds from 590 to 5000 rpm with 1800-rpm motor; 1180 to 10,000 rpm with 3450-rpm motor. Unit complies with JIC stds and can be purchased without motor plate to permit converting existing fixed-speed motor to variable-speed operation.

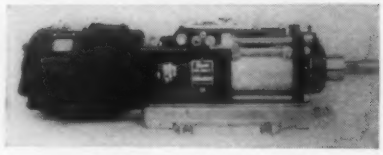


DEEP-HOLE DRILLING — *Boyar-Schultz Corp, 2110 Walnut St, Chicago 12, Ill.* Tool oscillates and has additional revolving motion for higher rpm on small drills. Drill with 0.050 dia will go into work 16 times its diameter without pullout.

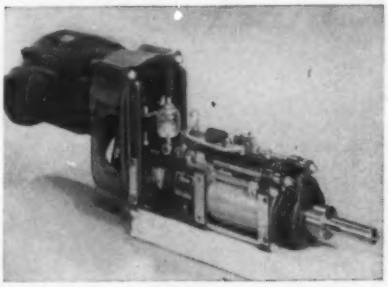




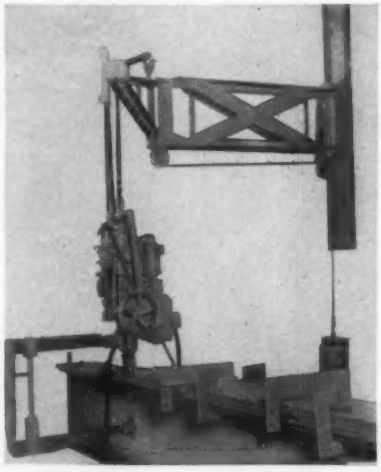
AUTOMATIC DRILL — *The Electro-Mechano Co, 261 East Erie St, Milwaukee, Wis.* Holes from .004 to ⅛-in. dia; spindle feed and speed under separate control for any ratio. ⅛-hp motor provides speed control from 1000 to 10,000 or 2500 to 15,000 rpm.



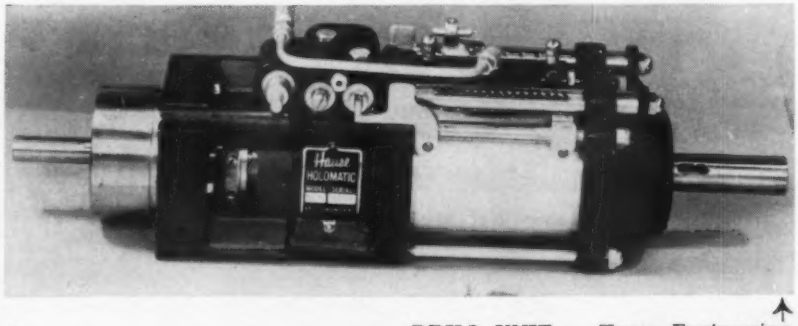
DRILL UNIT — *Hause Engineering, Montpelier, Ohio.* Model 24 Holomatic, rated at 1 hp has electric motor drive, uses air pressure to advance and retract drill. Operates at 50 to 150 psi and develops thrust 8.5 times input pressure. Accuracy to 0.0005 in. can be maintained. Cycling is automatic, semi-automatic, or manual.



AIR-HYDRAULIC TOOL — *Hause Engrg, Montpelier, Ohio.* Model 34 Holomatic has self-contained electric motor pulley drive. Speeds from 300 to 10,000 rpm; motors of ½, ¾, 1, 1½, and 2 hp; stroke is adjustable to 4 in.; work loads to 200 lb-in.



PORTABLE DRILL UNIT—*Artos Engineering Co, 2757 S 28th St, Milwaukee 46, Wis.* Works from any position around large, unwieldy steel beams, girders, and weldments, is operated by pushbutton and automatically drills holes up to 2 in. in dia at right angles to work surfaces. Suspended from a crane or other overhead structure, unit is counter-balanced. Max drill dia: 2 in.; drill rpm: 175 to 500; feed per rev: 0.005 to 0.020 in.



DRILL UNIT — *Hause Engineering, Montpelier, Ohio.* Model O4 air-hydraulic drill is a pulley-drive-spindle unit. Stroke is adjustable from 0 to 4 in. Maximum spindle speed is 5000 rpm. Feed rate on advance is adjustable from 0 to 240 ipm.

THREE-SPINDLE UNIT — *Errington Mechanical Laboratory, Inc, Staten Island 4, NY.* Rated at max capacity of ¼-in. drill and 5/16-in. tap. Work with up to a 5½-in. OD can be handled.

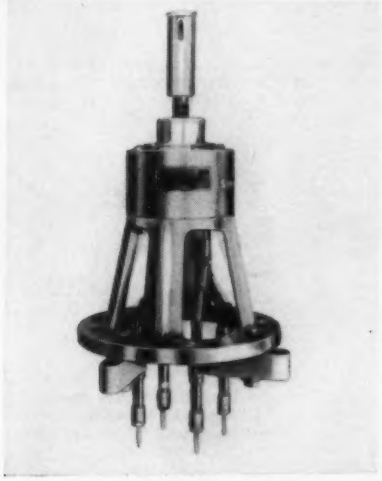
American Machinist 1955 PRODUCTION PREVIEW

TAPPING AND THREADING

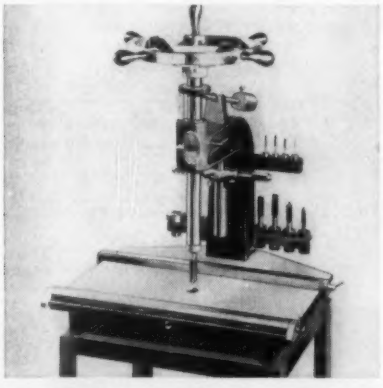
summarized from descriptions published during 1954

TAPPING HEAD — *Automatic Methods, 965 W Grand St, Elizabeth, NJ.* Has interchangeable leadscrew, cone clutch reversing mechanism, and positive depth control. Head may be attached to quill of any drillpress, can be adapted for semi- or fully-automatic operation.

TAPPING ATTACHMENT — *Homestrand Inc, 9 Addison St, Larchmont, NY.* Reversible unit for high-speed thread cutting with small taps. Gears are eliminated; axial ball-bearing functions as planetary gear transmission for reversing.



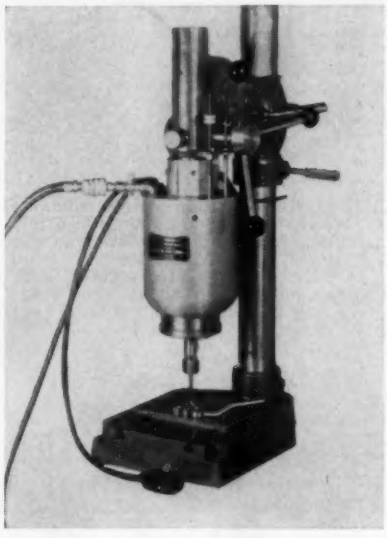
UNIVERSAL JOINT TAPPING HEAD —*Errington Mechanical Laboratory, Inc, Staten Island 4, NY.* No. 0, 0 to ¼-in. tap capacity, 4 and 6 spindles; No. 1, 7/32 to ½-in. capacity, 4, 6, and 8 spindles. Heads are of sand-blast aluminum.



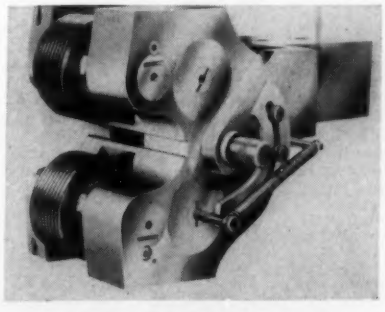
TAPPING MACHINE—*Lassy Tool Co, Plainville, Conn.* Hand tapping machine has spindle-balancing device to offset weight of spindle and operator's hand and avoid damaging small threads by forcing the tap.

HAND-TAPPING FIXTURE — *Tools, Inc, 1723 N 25th Ave, Melrose Park, Ill.* 24 x 34-in. T-slot bed with arm which takes interchangeable tap holders. Holders have centered female sockets to take standard tap in one end, T-handle in other end.

TAP DRIVER—*Scully-Jones & Co, 1901 South Rockwell St, Chicago 8, Ill.* Adjustable torque and full-releasing roller drive. Drive consists of drive shell, two rollers and inner cam drive collet. Torque settings range from 55 to 660 in.-lb.

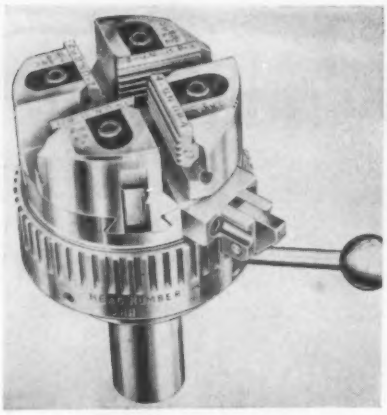


TAPPING UNIT—*Smith & Wiese Co, 1265 W Second St, Cleveland 13.* Cutting torque is controlled; taps are accommodated from No. 2x56 to 5/16 in. Electro-pneumatic unit produces Class 3 threads in materials to Rockwell 50$_c$.

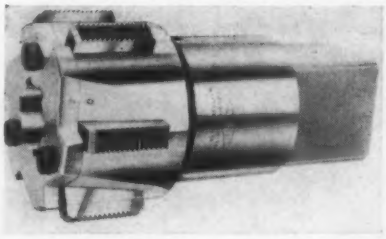


THREAD ROLLING ATTACHMENT —*Landis Machine Co, Waynesboro, Pa.* Sizes of attachment are No. 18; from No. 5-44 to ½-13, and No. 20 for ¾-24 to 1-8. First size runs lengths up to 13/16 in., second to 15/16 in. Attachment tips to avoid indexing interference, adjustment for taper, and precise timing.

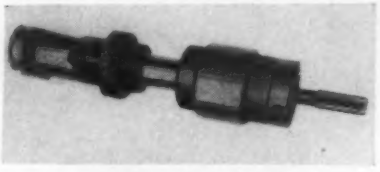
ADJUSTABLE-TORQUE DRIVER — *Scully-Jones & Co, 1901 S Rockwell St, Chicago 8, Ill.* Consists of a drive shell, two rollers, and inner cam drive collet. Torque is transmitted when rollers are wedged between drive shell and cams on collet. Five settings permit adjustment of torque so that release occurs before reaching breaking torque of tap.



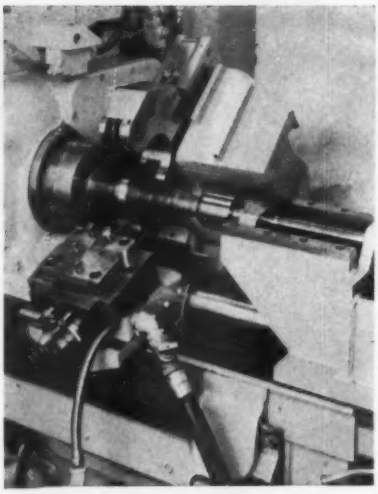
THREADING HEAD—*Landis Machine Co, Waynesboro, Pa.* Landmatic 5 HH threading head for automatics is stationary self-opening unit for sizes from ¼ to ⅝ in. Spring-loaded pivoted latch engages notches on adjustment ring; one notch of adjustment equals 0.001 in.



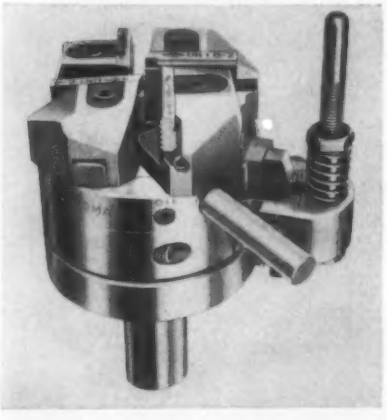
ADJUSTABLE TAPS—*Landis Machine Co, Waynesboro, Pa.* Tap sizes from 1⅛ to 8 in. are for initial tapping on reversing-spindle machines and automatic screw machines where collapsing taps cannot be used because of clearances.



ADJUSTABLE-TORQUE DRIVER — *Scully-Jones & Co, 1901 S Rockwell St, Chicago 8, Ill.* Special releasing driver with spring-loaded shank to accommodate leadscrew tapping.



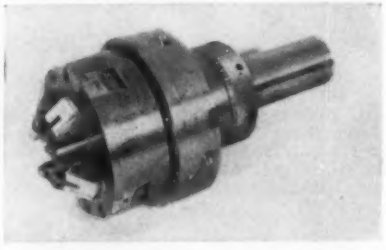
THREAD-ROLLING ATTACHMENTS —*Salvo Tool & Engineering Co, 26441 Gratiot Ave, Roseville, Mich.* Mounts on back cross-slide of the Fay automatic lathe and operates at machine's normal spindle speed. Actuated by a standard cam, the attachments are being used to roll special 3¼-in.-12 threads. Thread rolls in any diameter and pitch up to the capacity of the machine can be obtained.



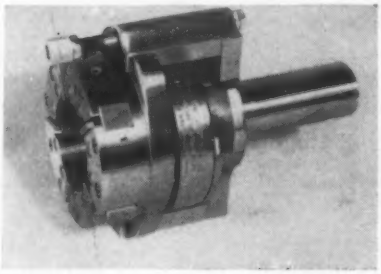
DIE HEAD — *Landis Machine Co, Waynesboro, Pa.* ½-in. EXX for Nos. O, OG, 2, and 2G B & S automatic screw machines. Head incorporates durable tangential chasers, and a range coverage from No. 4 to ½ in. inclusive.

LEADSCREW TAPPING ATTACHMENT—*Automatic Methods, Inc, 965 W Grand St, Div 10, Elizabeth, NJ.* Larger support arm for Auto-Tap features adjustable slide which permits 16 to 20-in. round-column drillpresses to be used. This 500 Series support arm is available in several models to fit different column diameters.

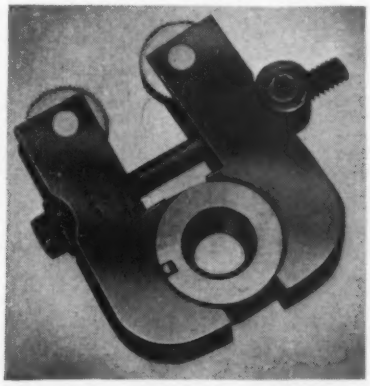
TAPPING ATTACHMENT — *Ettco Tool Co, Inc, 594 Johnson Ave, Brooklyn 37, NY.* Redesigned Ettco-Emerick attachment has steel clutch and synthetic, rubber-bonded facing material in place of leather-faced aluminum. Mist lubrication is provided by built-in fan.



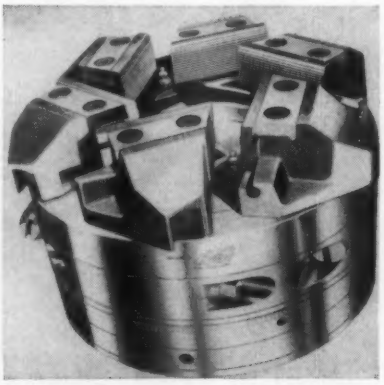
DIE HEAD LINE—*Eastern Machine Screw Corp, Truman & Barclay Sts, New Haven, Conn.* Includes insert chaser unit wherein one set fits different styles and sizes of die heads. Additional developments include die heads for B & S automatics.



DIE HEAD—*Eastern Machine Screw Corp, New Haven 6, Conn.* Light-duty 11005 DM H&G insert-chaser unit for No. 2 B&S automatics with 1½-in. capacity spindles and for thread sizes from 1⅛ to 1½ in. with pitches not coarser than 18 TPI. Size 152 style MM have capacity from ¼ in. to 1¼ in. OD.



KNURLING TOOL — *Boyar-Schultz Corp, 2110 Walnut St, Chicago 12, Ill.* Cross-slide knurling and thread-rolling tool has self-centering float to compensate for misalignment. It can be applied to front or rear cross-slides; capacities range from 0 to 1¼ in.



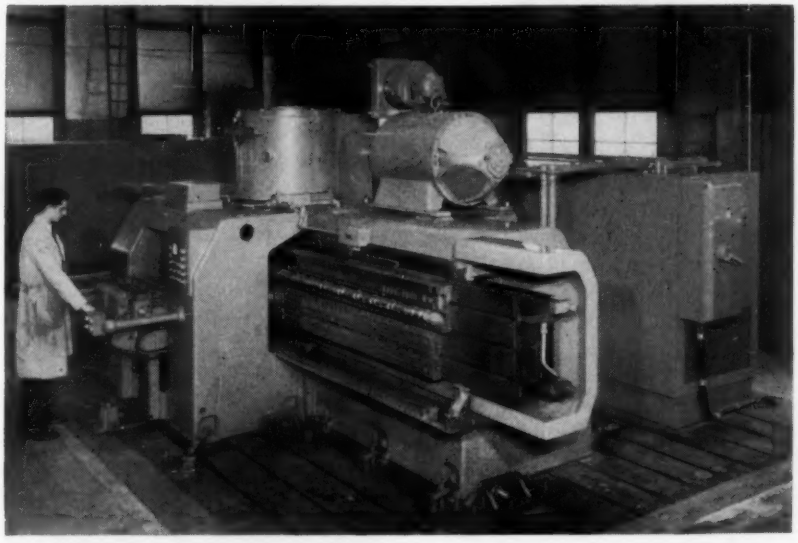
SIX-CHASER HEAD—*Landis Machine Co, Waynesboro, Pa.* For application to No. 4 Model C Landmaco threading machine; features 2½ to 6-in. pipe capacity and 2⅞ to 6⅝-in. bolt capacity. Unit can be equipped with internal trip mechanism, a reamer, and a reamer attachment.

American Machinist
1955
PRODUCTION PREVIEW

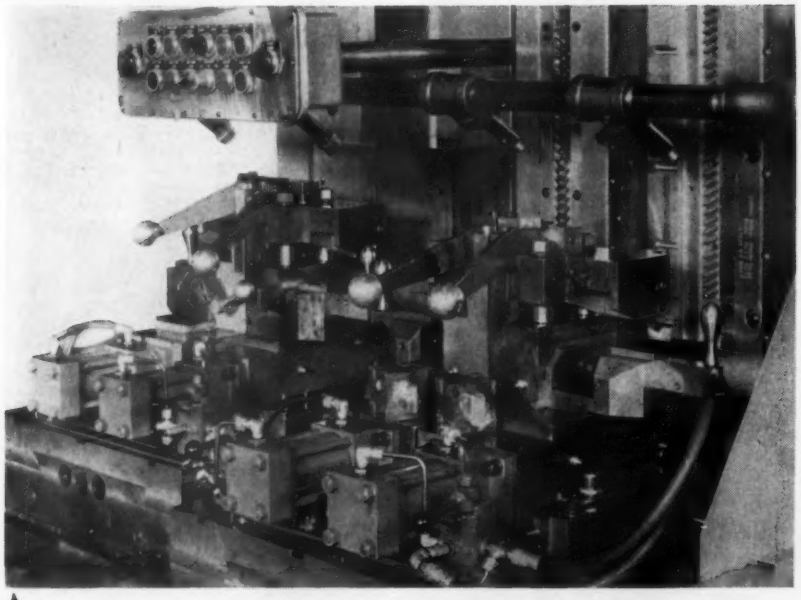
BROACHING

summarized from descriptions published during 1954

DOUBLE-ACTING BROACHING MACHINE—*Colonial Broach Co, Box 37, Harper Station, Detroit 13, Mich.* Electrically controlled with double-acting mechanical drive and hydraulically actuated fixture. The 25-ton machine, Model HM-25-130, has max stroke of 130 in. Ram speed of standard machine is variable from 30 to 150 sfm. Width of ram is 24 in; 150-hp, 75-rpm motor is coupled to 18-in. center-distance, 20:1-ratio, cone-drive double-enveloping worm gear set driving helical pinion which drives rack to provide high capacity for ram.

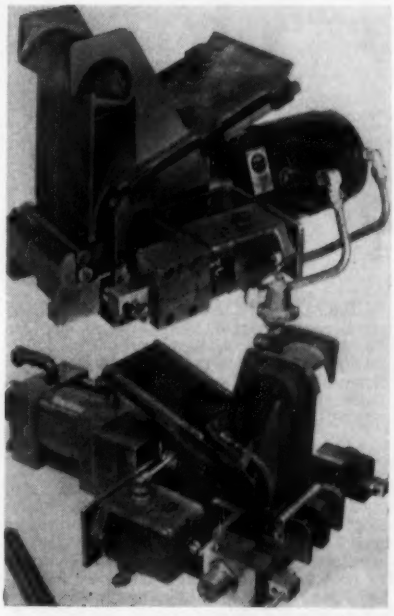


INTERNAL BROACHING MACHINE —*Acme Broach Corp, Milan, Mich.* From 6 to 30 ton; from 36-in. to 60-in. stroke; vertical pull-down model. Travel speeds of both cylinders are variable and each has self-contained hydraulic circuit. Automatic lubrication to slides.

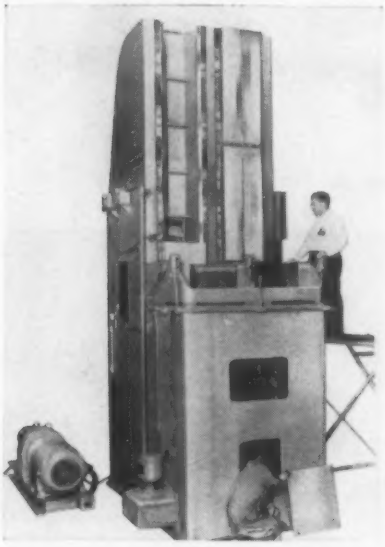


BROACHING MACHINES — *Detroit Broach Co, Rochester, Mich.* Jet engine turbine buckets are broached on 15-ton, 100-in. stroke dual-ram, vertical surface broaching machine—one of new machines. Carbide-tipped broaches produce fir-tree form at bucket root, and also finish tip end. Tool life is 800 to 1000 parts between grinds. Ram is preloaded by pressure roll through torsion bar actuated when broach is up; load is removed on return. A 1200-lb thrust is imposed sideways; 800-lb force keeps ram back. Production rate is 500 per hour with speed of 60 sfpm and sulfur-base oil coolant.

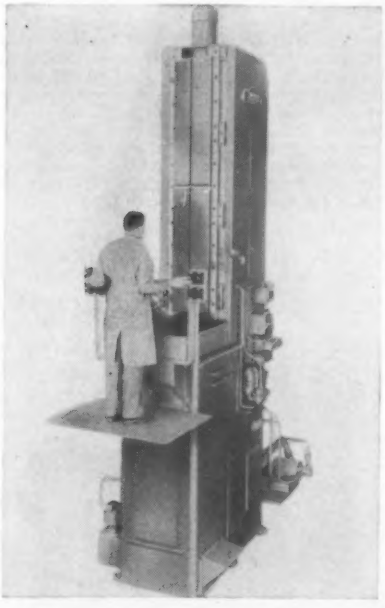
BROACHING MACHINE — *Colonial Broach Co, Box 37, Harper Station, Detroit 13.* Colonial 4 does push, pull-down broaching and press operations in vertical position, as well as horizontal broaching. Operates as utility and straight-production machine. Horizontal and vertical positions achieved by pivoting bed section about top of base by hydraulic lift cylinder.



AUTOMATIC LOADERS — *National Broach & Machine Co, 5600 St Jean, Detroit 13, Mich.* For single ram vertical surface broaching machines. Particularly adapted to handling round parts on which flats, slots, or ends are broached in single-ram machines. Loaders have magazine feed arrangements that work in conjunction with hydraulic-cylinder-powered load and unload mechanism.



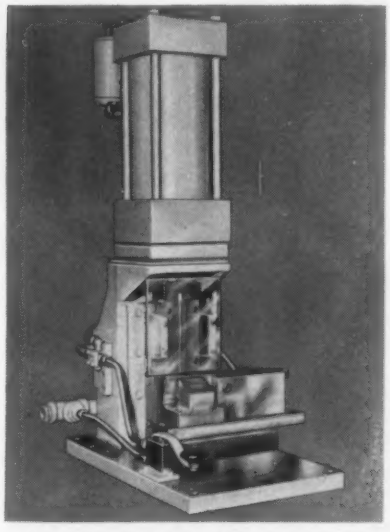
DOUBLE-RAM BROACHING MACHINE—*The Lapointe Machine Tool Co, Hudson, Mass.* Vertical unit with electro-mechanical drive for mass production of parts requiring surface broaching. Variable speeds; strokes available from 70 to 100 in., with motor suited to job requirements.



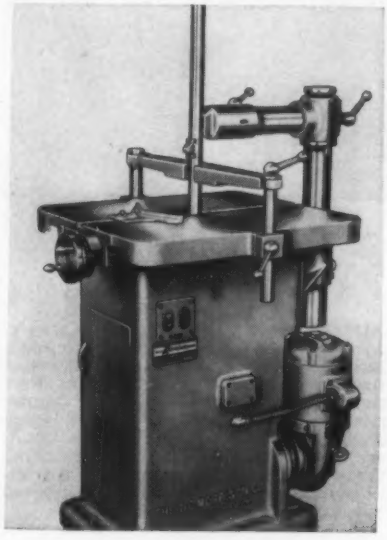
SURFACE BROACHING MACHINE—*American Broach & Machine Co, 415 W Huron St, Ann Arbor, Mich.* SB-90-15 has 90-in. stroke, 15-ton capacity. Speed variable from 5 to 30 fpm; return speed, 60 fpm; work height, 9 ft; overall height, 19 ft.

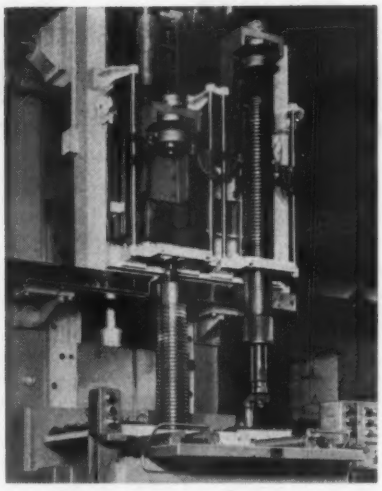
KEYSEATER—*Northfield Foundry & Machine Co, Northfield, Minn.* Will cut straight or tapered internal keyways ⅛ to 1 in. wide. Model K-6 has adjustable gibs, with slotted clamps to locate off-center or oblong work. 1-hp motor.

VERTICAL HYDRAULIC BROACH—*Pioneer Broach Co, 6434 E Telegraph Rd, Los Angeles 22.* 2-ton pulling power; stroke of 15 in. Hand lever builds up pressure and holds it while each lever stroke moves broach ½ in.

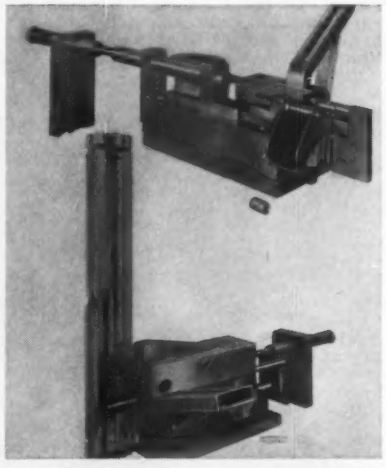


BENCH BROACHING MACHINE—*Bond Tool & Mfg Co, Waterbury, Conn.* Takes less than 2 sq ft of bench space, requires only 60 psi air pressure.





TWO-PASS BROACHING — *Colonial Broach Co, Box 37, Harper Station, Detroit 13, Mich.* Setup on a Colonial 50-ton, 62-in.-stroke, pull-down broaching machine enables large components requiring two passes to be broached internally from start to finish with minimum handling.



AUTOMATIC LOADERS — *National Broach & Machine Co, 5600 St Jean Ave, Detroit 13, Mich.* Speed output of externally broached round parts on conventional dual ram vertical broaching machines. The loaders are made in a wide variety of types to accommodate specific parts, feature magazine feeds and simple feed, clamp, and eject mechanisms. No auxiliary power source is required. The loaders consist of a fabricated steel base which supports the magazine feed chute, feed and clamping mechanism, and unloading chute.

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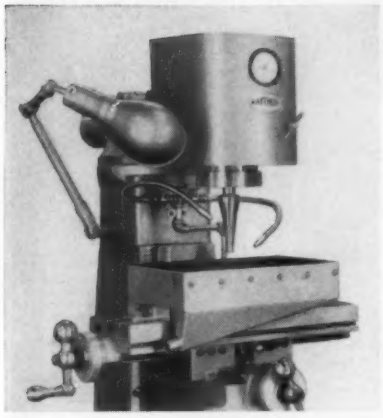
AUTOMATIC KEYSEATER—*The D C Morrison Co, P O Box 1017, Cincinnati 1, Ohio.* Cuts keyways from 1/16 to 1 in. with maximum length of cut of 8½ in. and length of stroke varying from 6 to 9 in. The machine operates at 25 spm; largest diameter cutter bar is 1¼ in. The distance from a 1-in. cutter to the column is 16¼ in.; maximum distance under standard clamps is 9 in.

American Machinist

1955 PRODUCTION PREVIEW

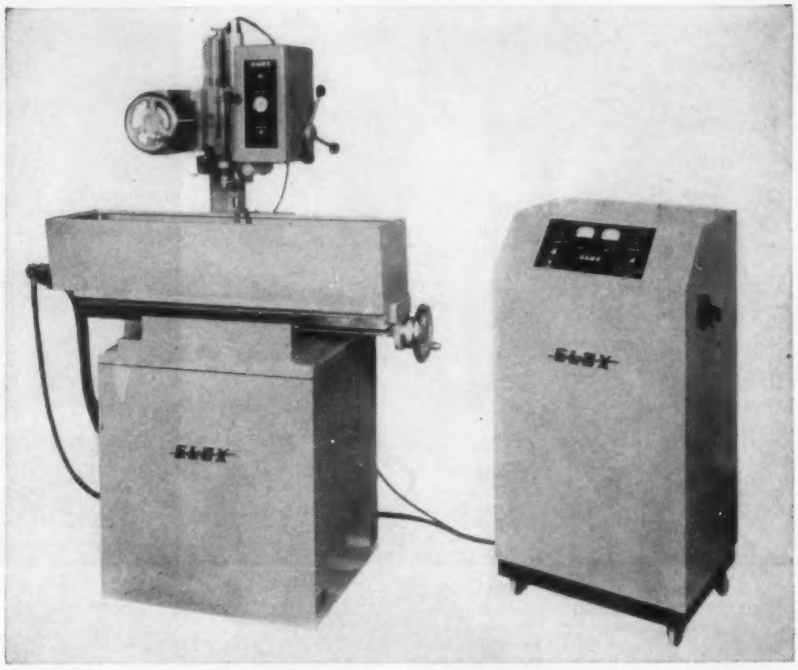
ELECTRIC-ARC MACHINING

summarized from descriptions published during 1954

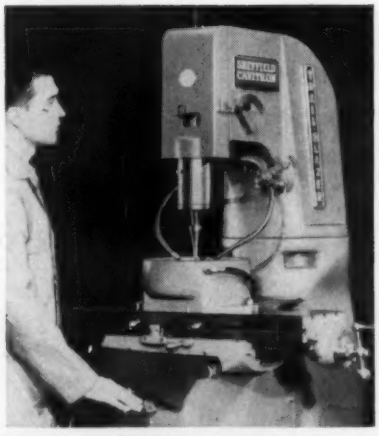


ULTRASONIC MACHINE TOOL — *Raytheon Manufacturing Co, Waltham 54, Mass.* A magnetostrictive transducer vibrating at 25,000 cps drives the abrasive particles to strike with forces up to 5000 or 10,000 times their normal weight. Cuts material from carbides, tungsten, molybdenum, hard steel tools, and ceramics.

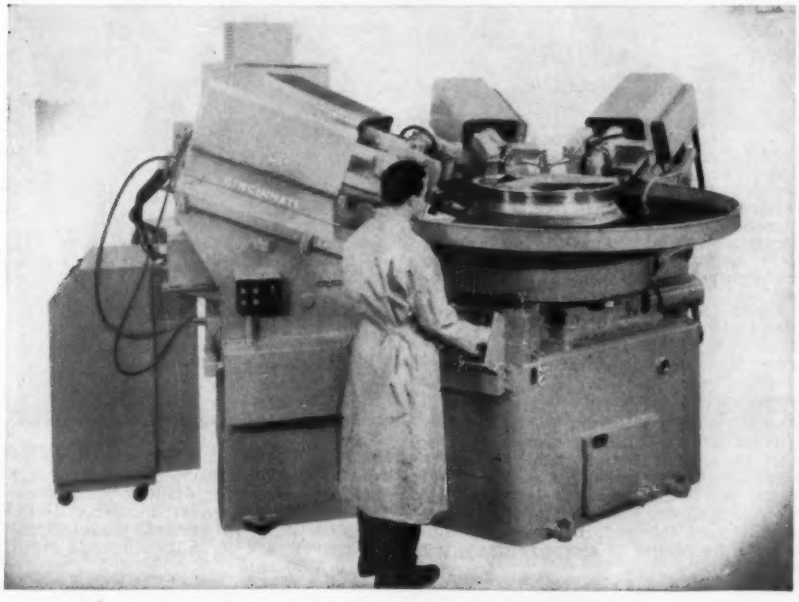
CROSSARM ASSEMBLY—*Electro Arc Mfg Co, Box 448, Ann Arbor, Mich.* For use with column-type electro-arc metal disintegrators. Provides extra-rigid support for operating head, easy transverse adjustment, independent of angular settings; independent angular adjustments in horizontal and vertical planes; easy duplication of setup; and automatic gravity feed of operating head.



ELECTRICAL DISCHARGE MACHINE—*Elox Corporation of Michigan, 740 N Rochester Rd, Clawson, Mich.* The M-500; work-pan mounting provides use of entire table area which is 10x42 in. The 9x15-in. insulated plate is movable over entire work area. Spindle has 9½-in. travel in the lapped-in quill.



ULTRASONIC MACHINE TOOL—*The Sheffield Corp, Dayton 1, Ohio.* Cavitron can produce holes as small as 0.012-in. dia, or slots of that width. Operation is accomplished by use of ultrasonic tool head vibrating from 18,000 to 30,000 cps while pump provides continuous flow of abrasive grit in solution over the work surface.



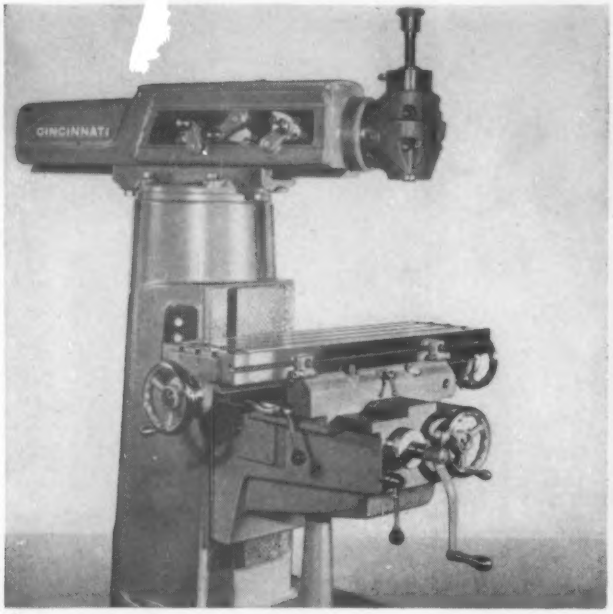
ELECTRO-EROSION MACHINE — *The Cincinnati Milling Machine Co, Cincinnati 9, Ohio.* Electrical discharge machining cuts 8 radially spaced elliptical holes in stainless steel diffuser case. Part has an outer and inner shell. 4 in-line operations are necessary to produce each of the 8 holes to ±0.005-in. Floor-to-floor time is 110 min.

American Machinist

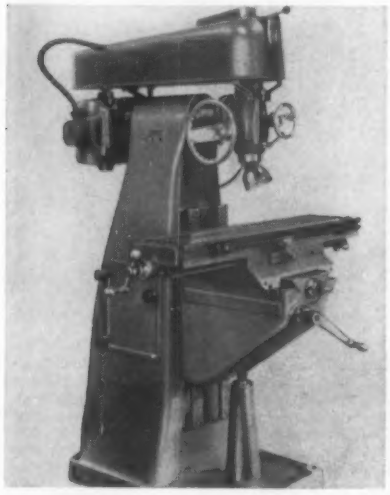
1955 PRODUCTION PREVIEW

MILLING

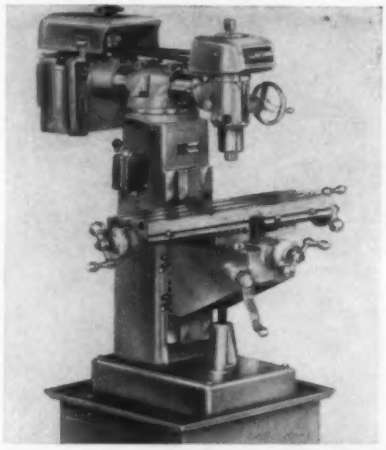
summarized from descriptions published during 1954



MILLING MACHINES—*The Cincinnati Milling Machine Co, Cincinnati 9, Ohio.* Three styles with manual, power, or heavy-duty spindle heads. Standard ranges are: longitudinal, 16 in., across 10 in., and vertical, 17 in. Power feeds are 0.002 or 0.006 ipr. Eight spindle speeds in three ranges. Heavy-duty machine has range from 100 to 1530 rpm.

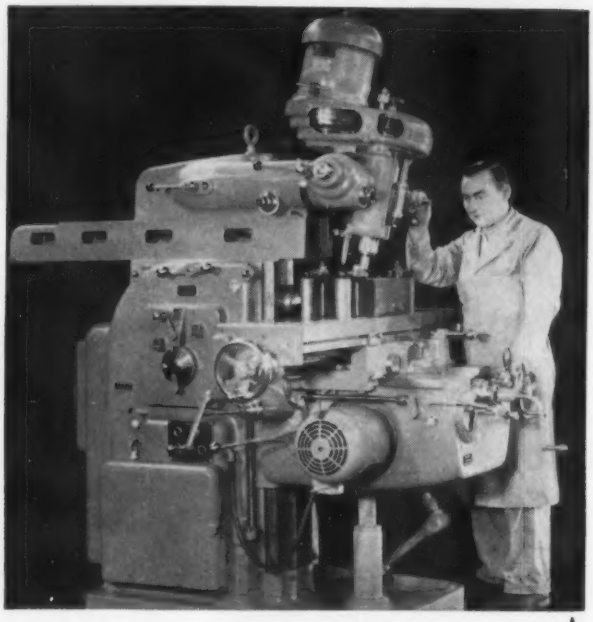


VERTICAL MILLER—*The US Burke Machine Tool Div, Cincinnati Mfg Corp, Brotherton, Rd, Cincinnati 27, Ohio.* Improvements are: relocation of vertical feed handle for greater convenience; addition of a micrometer dial. New accessories are: hardened and ground leadscrews; longitudinal power table feed instantly reversible and infinitely variable between 0 and 12 ipm.

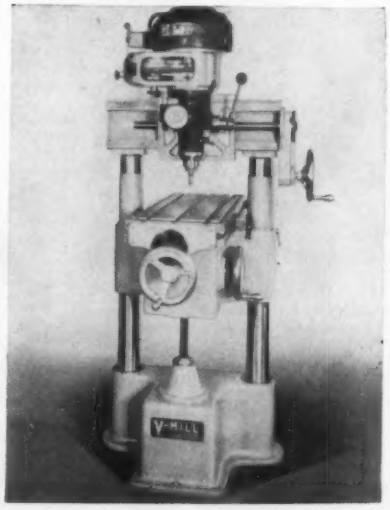


VERTICAL MILLER—*Clausing Div, Atlas Press Co, North Pitcher St, Kalamazoo, Mich.* Spindle heads swivel in vertical plane and set at any angle; turret rotates in horizontal plane. Specifications include: 6x24-in. table with 15-in. longitudinal and 5-in. transverse travel; operation from ½ or ¾-hp motor.

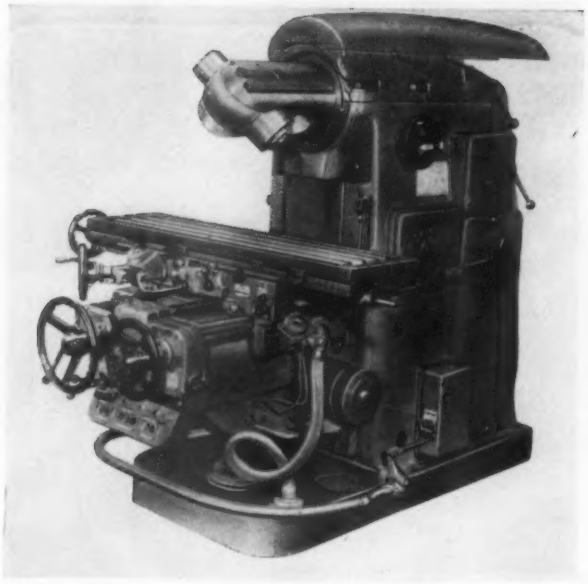
VERTICAL MILLING MACHINE—*The US Burke Machine Tool Div, Cincinnati Manufacturing Corp, Cincinnati 27, Ohio.* Vertical table provides 9½x36-in. Working surface. Quill travel is 5½ in. Entire head is balanced by mounting motor behind supporting column. Guard (hinged on head) and motor can be raised to simplify changing belt.



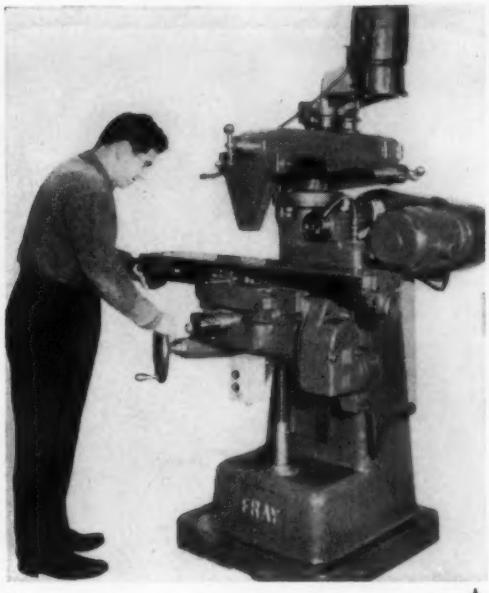
MILLING MACHINE—*George Gorton Machine Co, 1321-B Racine St, Racine, Wis.* Basically heavy-duty No. 2 or medium-duty No. 3 horizontal mill with Receptor Ram in place of overarm. Ram takes standard arbor support and support brace for slab or straddle milling. Angular milling is done by moving head and ram assembly forward while ram remains in rear position. Universal head swivels 45° left, right, and front, and 30° back.



VERTICAL MILL—*Lodding Inc, 79 Beacon St, Worcester, Mass.* Performs milling, boring, and drilling operations. Table has 20-in. travel; head has 16-in. cross travel, 17-in. vertical travel. Spindle travel is 4 in. Eight speeds from 120 to 3500 rpm.

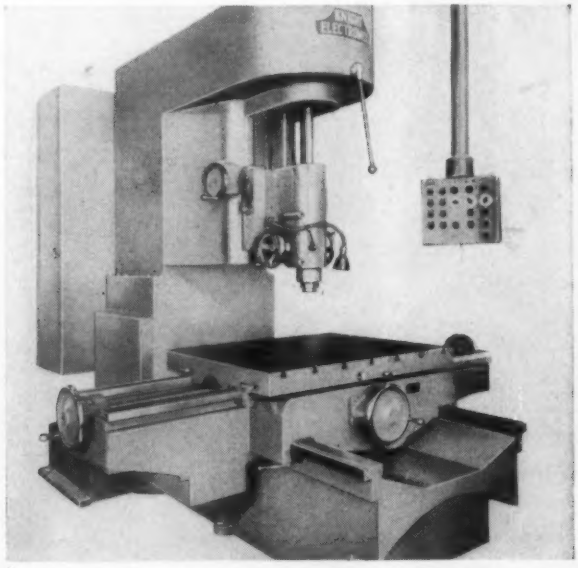


TILT-HEAD MILL — *Permasco, Div Winter, Wolff & Co, Inc, 76 Beaver St, New York 5.* Head of Gambin F27 milling machine can be set in three planes. Entire spindle assembly slides in and out, and head swivels and tilts. Has 8-hp motor, 40 speeds, 36 feeds, and optical gages reading to 0.005 in.



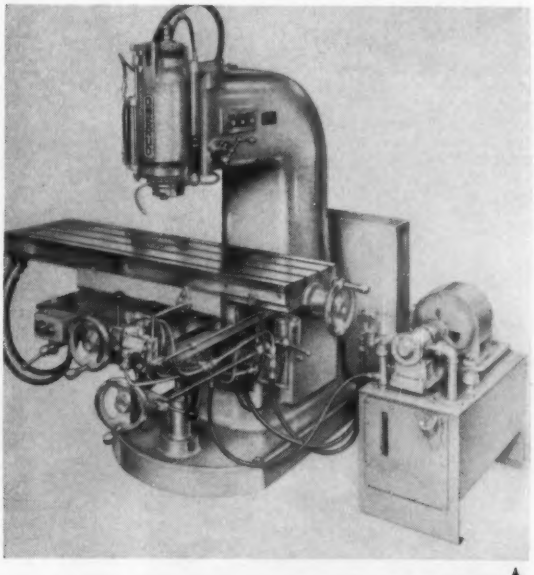
RAM MILLING—*Fray Machine Tool Co, 2935 N Ontario St, Burbank, Calif.* Model 1½V has two table sizes: 9x36 in. with 22-in. longitudinal travel, and 9x42 in. with 28-in. Quill has 3½ in. of travel. Standard: 450 to 6400 rpm, 6 speeds. Dovetail ram assembly has 12½-in. standard travel.

POWER FEED UNITS — *The Fray Machine Tool Co, 2935 N Ontario St, Burbank, Calif.* Accessories to line of milling machines. Two types are: table unit for Model 10, power downfeed for Type 4. Table feed is arranged for pickoff gears from ½ to 13 in. Head power feed has three feeds: 0.0015, 0.003 and 0.006 ipr.



VERTICAL MILL—*W B Knight Machinery Co, 3920 West Pine Blvd, St Louis, Mo.* Electromill will bore, drill, or vertical-mill pieces as large as 30x48 in. and weighing up to 5000 lb. Spindle speed and feed can be changed without stopping spindle. Variable-speed motors, equipped with Thymatrol, offer range of infinitely variable speeds and feeds.

MILLING MACHINE—*Detroit Milling Cutter Co, 28625 Grand River, Farmington, Mich.* Futurmill; designed for metal removal at high speeds and feeds. Widely used in structural steel and cold-drawn steel plants. Offered as low-cost substitute for horizontal boring machines.

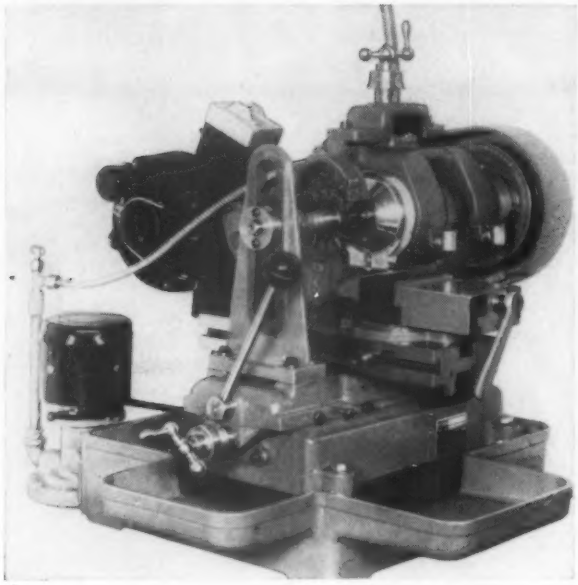


VERTICAL MILL — *Industrial Metal Products Corp, 3400 W St Joseph St, Lansing, Mich.* Impco Model 1-B, with head vertically adjusted by counterbalanced ram, weighs 3100 lb, has table working surface of 10x40 in. Max longitudinal table movement is 24 in.; cross movement, 12 in. Range of opening from table to spindle nose, 4¼ in. min, to 18¼ max. Spindle quill dia, 3½ in., with 5-in. travel. Speed range, 75 to 3000 rpm.

VERTICAL MILLING MACHINE — *Universal Vise & Tool Co, Parma, Mich.* Table is 9 x 36 in. with 21-in. longitudinal feed, 10-in. crossfeed, and 14-in. vertical knee travel. Six spindle speeds from 220-2300 rpm available.

MILLER—*Onsrud Machine Works, Inc, 3910 Palmer St, Chicago 47.* Model A-245 incorporates: simplified hydraulic-feed controls; directional, knee, cross, and table-feed control with five forward and reverse positions; and table speeds from 0 to 150 ipm. Capacity is 19¾ in. Travel is 28 in. at 0 to 200 ipm. Cross-slide travel is 14 in. at 0 to 200 ipm, knee travel 10 in. from 0 to 50 ipm.

BENCH MILL—*Precise Products Corp, 1328 Clark St, Racine, Wis.* Quill speeds adjust continuously from 10,000 to 45,000 rpm. Head adjusts through 360° in vertical plane, and arm holding the quill tilts 60° above or below horizontal.

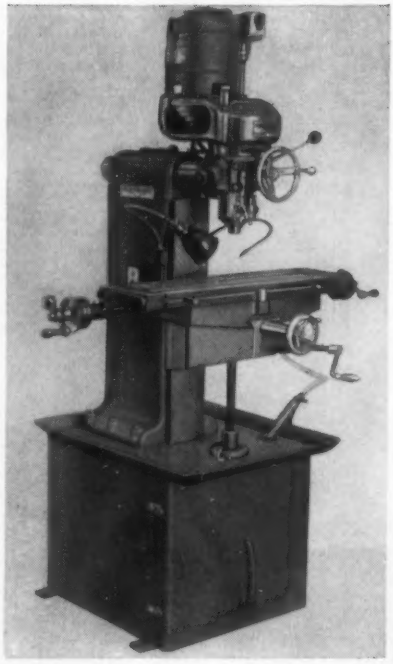


BENCH MILL—*The Barker Engineering Co, 500 Green Road, Cleveland 21, Ohio.* Accessories include low-spindle-speed drive, arbor support for heavy cuts, coolant pan with motor-driven pump, cutter guard, and spindle-nose coolant shield. Hand-lever or micrometer-feed-screw operation control travel on all three positions.

BENCH MILL ACCESSORIES—*Barker Engrg Co, 500 Green Rd, Cleveland 21, Ohio.* Widen versatility of Barker bench mill. Special low-spindle-speed drive has been developed for slitting and straddle milling. Special stub arbors are available to take standard high-speed steel or carbide slitting saws and cutters.

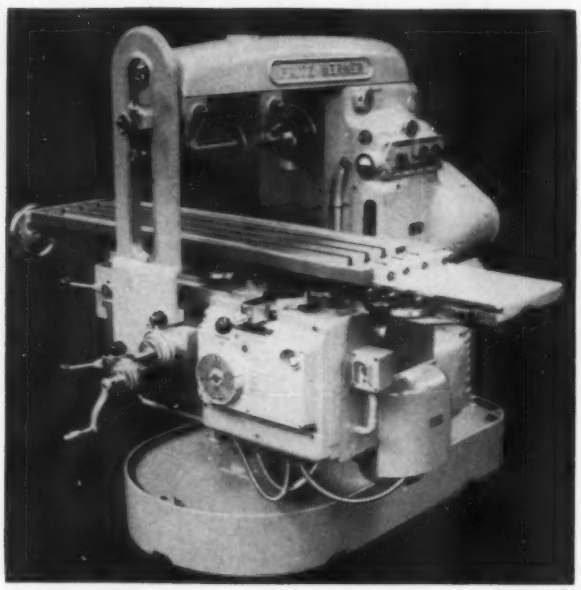
BENCH MILL—*Viking Industries, PO Box 22, Rockford, Illinois.* 4x22-in. T-slotted table with 8 in. longitudinal travel. Will accommodate 6½ in. of vertical motion. Traversing motion is 4 in. Eight spindle speeds from 700 to 4500 rpm.

MILLING MACHINES—*Ball Machinery Co, 715 W Lake St, Chicago, Ill.* Swedish Abene machines combine vertical and horizontal milling, as well as angular milling, in one machine. Driven by 2-hp motor with twelve speeds from 50 to 1300 rpm.

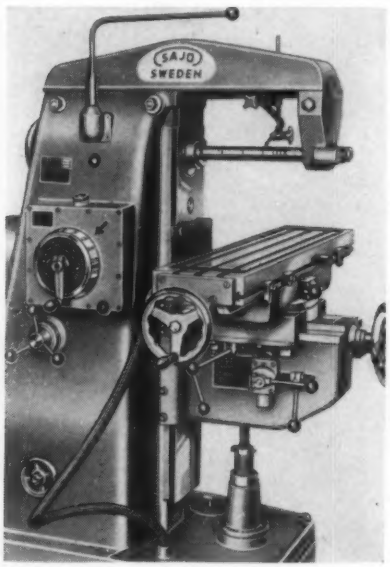


VERTICAL MILLER — *Crowningshield-Harris Co, Greenfield, Mass.* Model VM-1 has six-step V-pulleys for spindle speeds from 330 to 3000 rpm. Large table is supported by saddle bearing surface of 117 sq in. Machine is available with Bridgeport Model M attachment, the Crowningshield, or without a vertical head, if desired.

TOOL AND DIE TABLE—*Advance Products, Benton Harbor, Mich.* Highly detailed work may be performed on most standard vertical milling machines equipped with this rotary table. Work is located and clamped on the 11-in.-square top cross-slide. Cross-slides may be adjusted for cutting radius whose center lies within 8-in.-square area.

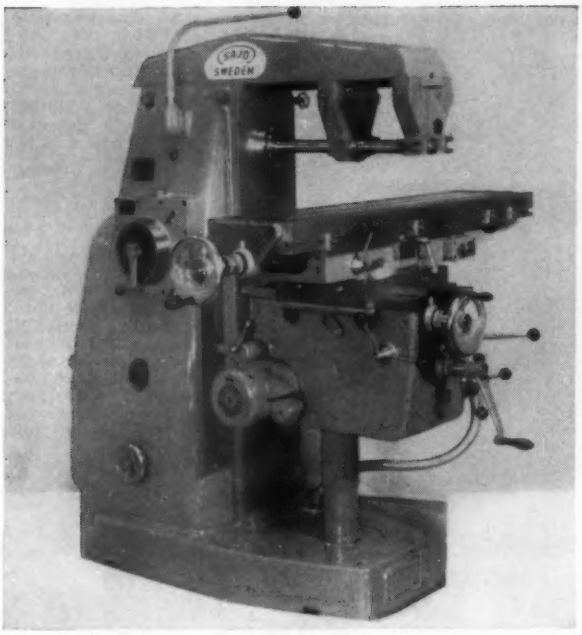


MILLING MACHINE—*Marac Machinery Corp, 1819 Broadway, New York 23, NY.* Werner Type 8,103 incorporates pick-off gears for feeds and speeds. Twenty speeds range from 22 to 1800 rpm; 32 feeds range from ¼ to 9 ipm, ½ to 17½ ipm, ¾ to 26 ipm. Rapid approach and return is at 160 ipm.

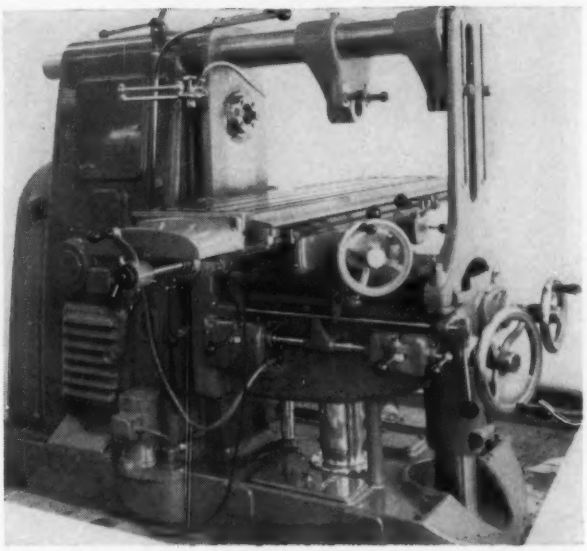


MILLING MACHINE—*Austin Industrial Corp, 76 Mamaroneck Ave, PO Box 430, White Plains, NY.* SAJO model 53 miller has 41x9-in. table working surface, 3½-hp motor; 16 spindle speeds, 39 to 1500 rpm; twelve power feeds, longitudinal, vertical and transverse. It features all-geared transmission.

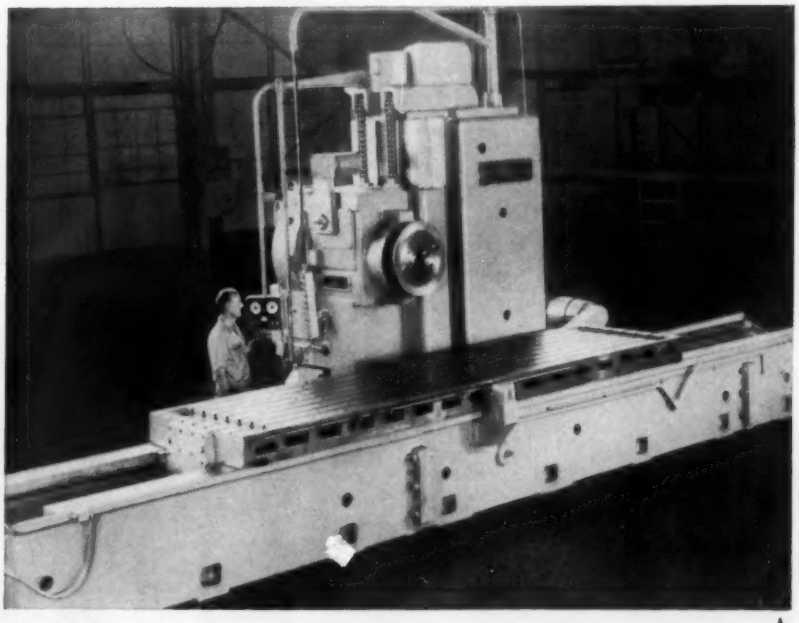
PRODUCTION MILLER—*Morey Machinery Co, 383 Lafayette St, New York 3.* Steinel SH4AE has power feed, rapid approach, 8 feeds independent of spindle speed. Designed for 1-in. milling arbor.



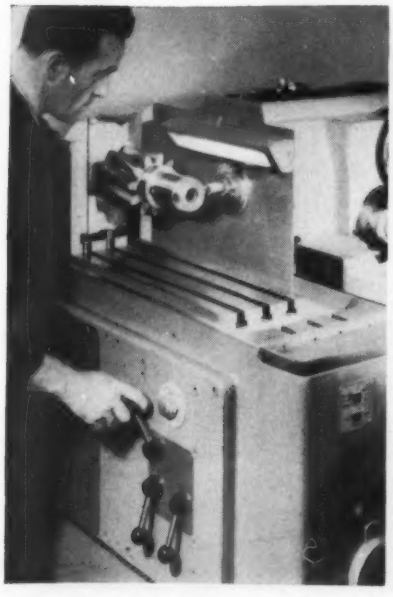
MILLING MACHINE—*Austin Industrial Corp, 76 Mamaroneck Ave, White Plains, NY.* SAJO Model UF-54 has gearbox built into knee and driven by separate motor. Gearing for spindle drive is built into column; spindle and table have individual drives. Handwheel provides for adjustment of V-belts. Machine incorporates 12 feeds. Sixteen spindle speeds vary from 39 to 1500 rpm.



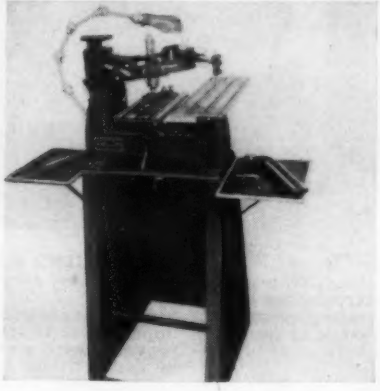
UNIVERSAL MILLING MACHINE—*Mattsson Machinery, Inc, 19 Greenwood Ave, Montclair, NJ.* Swedish Koping UF2A, has column of heavy dimensions widened at bottom to provide motor compartment. Eighteen spindle speeds range from 30 to 1500 rpm. Cross feed of table is 10¾ in.; vertical feed, 17¾ in.



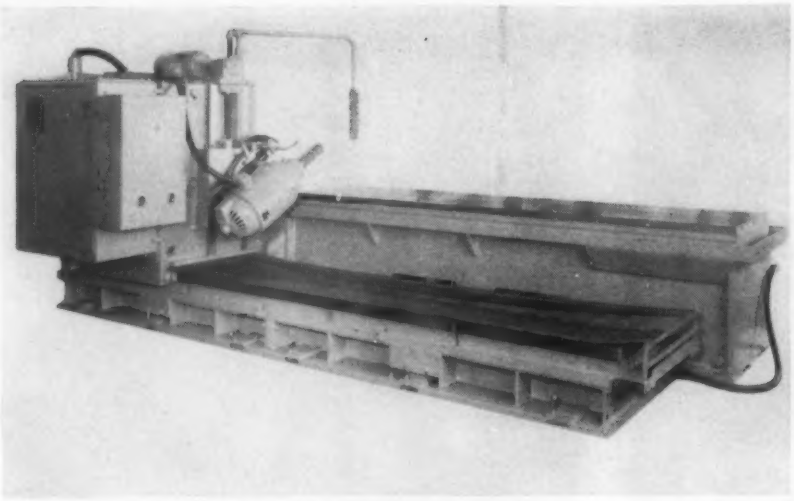
MILLING MACHINE — *Sundstrand Machine Tool Co, Rockford, Ill.* Larger Rigidmil is for heavy work. Model 77 has 48-in.-width table and is furnished with feed strokes of 144, 168, 192, or 216 in. Spindle has either 60, 75, or 100-hp drive motor. Automatic square cycle can be obtained for rough milling die shanks.



KEYWAY MILLER—*Kurt Orban Co, Inc, 205 E 42nd St, New York 17.* Hurth LF32 cuts keyways three times as fast as conventional machines, by alternate, hydraulically controlled raising and lowering of spindle. Max. cutter dia 1½ in., 15 speeds from 90 to 2240 rpm, 3 depth feeds, 12 longitudinal feeds.



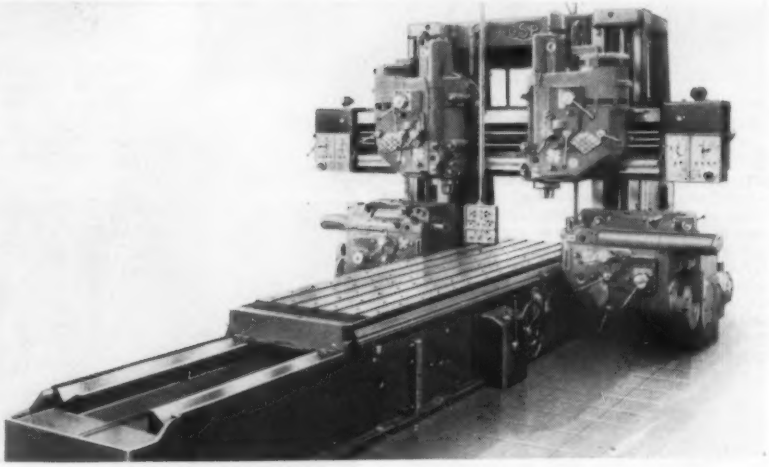
ENGRAVING MACHINE—*H P Preis Engraving Machine Co, 16 Industrial Branch, Hillside, NJ.* Model UE-3 Preis-Panto unit has fabricated floor stand, handwheel screw worktable adjustment. Stand height is 30 in. and width is 19x19 in.



MILLING HEAD—*Rockenfelder Industries, Strasburg, Ohio.* Three-spindle unit is adjustable from 14-in max center distance between spindles to straight-line operation without removing head from machine. Operations include: one-pass milling for T-sloths; multiple key slot milling; dovetail milling; wide face milling; and milling edges and top surfaces of work.

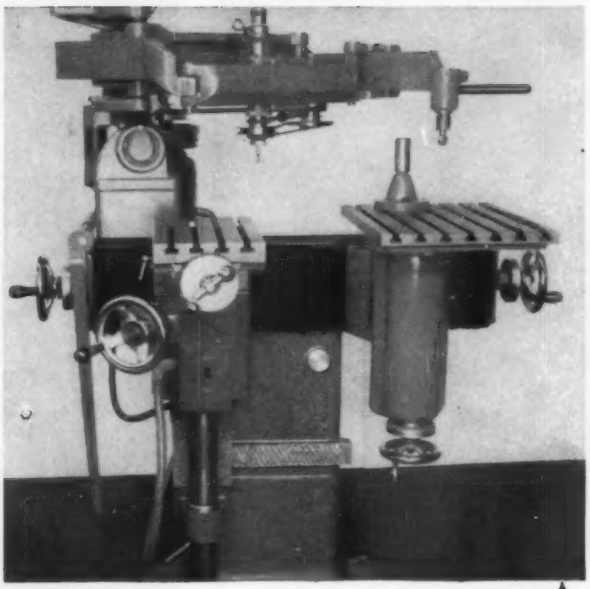
MILLING MACHINES — *Permasco, Div Winter, Wolff & Co, Inc, 76 Beaver St, New York 5, NY.* Double-column, heavy-duty type designed to take full advantage of carbide cutting tools and featuring infinite variations of feeds and speeds through Ward Leonard control units. Speeds from 15 to 300 fpm for planing are available at turn of a dial. Milling heads can be equipped with up to 70 hp each.

SCARF MILLING MACHINES—*Ekstrom, Carlson & Co, 1400 Railroad Ave, Dept M-1, Rockford, Ill.* SM-100 openside scarf and edge milling machine for use on non-ferrous metals. Mounted on vertical column, horizontal spindle head can be adjusted to tilt 30° above or below centerline. Worktable is 36 x 144 in.; vertical column has variable feed rate from 10 to 200 ipm.

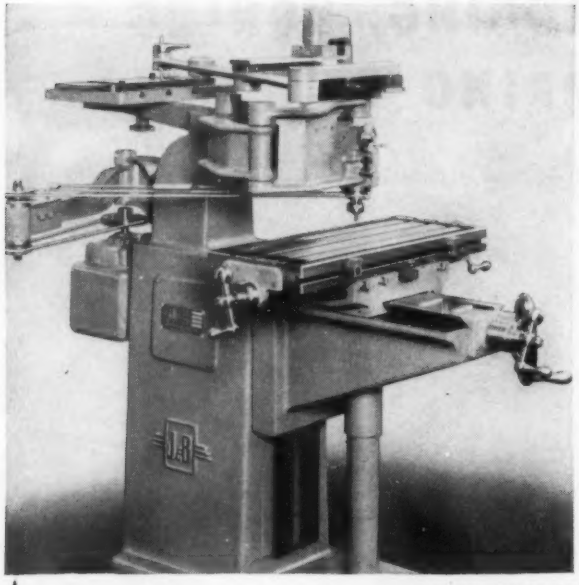


MILLING HEAD — *Brown Vertical Milling Head Co, 1615 Riverside Drive, Los Angeles 31.* 4500-rpm vertical spindle attachment is rated at 1½ to 15 hp. 32 sizes and models. Micrometer spindle feed optional.

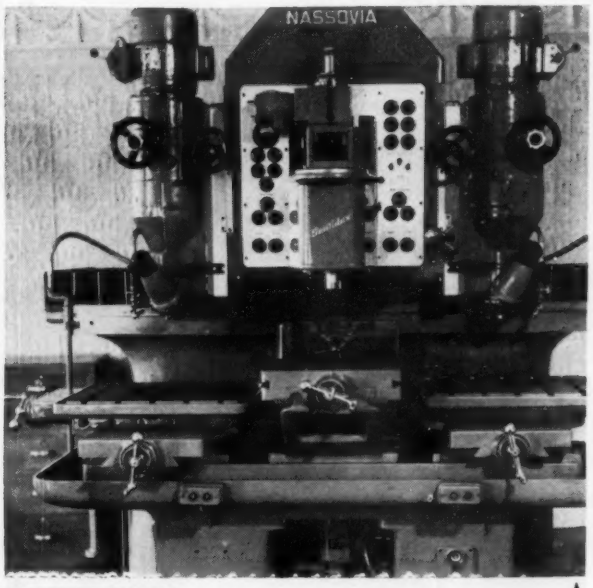
ELECTRONIC AIRFOIL MILLER—*Pratt & Whitney, Div Niles-Bement-Pond, West Hartford 1, Conn.* Non-contacting tracer control and a fair-curve interpolating system are combined in Model 102 for generating original three-dimensional contoured shapes from a series of simple cross-section templets. Speed ranges in vicinity of 25 ipm.



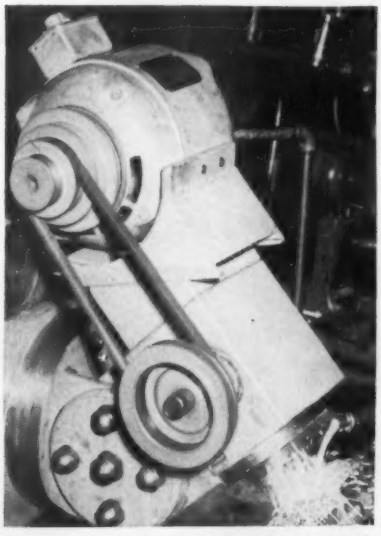
DIE-SINKING MACHINE—*J Arthur Deakin & Son, 150-28 Hillside Ave, Jamaica 32, LI, NY.* Produced by Alexander Machinery, Ltd, for production of molds and dies in either 2 or 3 dimensions where irregular forms are of primary importance. 14 spindle speeds from 475 to 9500 rpm; spindle provided with standard ball races holding cutters up to ⅜ in. dia. Vertical feed of copy holder, 8½ in.



PANTOGRAPH ENGRAVER — *Johnson & Bassett, Inc, Worcester, Mass.* For production engraving, profiling, die-cutting, and milling in steel, cast iron, non-ferrous materials, and plastics. With spindle arm locked, it also does conventional milling. Reduction ratios vary from 1:1 to 1:40; spindle speed is infinitely variable from 1200 to 11,500 rpm.

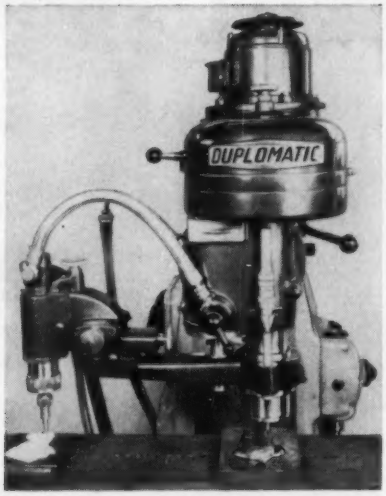


TWO-SPINDLE DIE SINKER—*Carl Hirschmann Co, Inc, 30 Park Ave, Manhasset, NY.* Nassovia Machine, developed in West Germany, is reported to be capable of copy-milling every contour, including stepless tracing of vertical walls. Spindle speed is infinitely variable from 150 to 2900 rpm. Hydraulic tracing attachment is fitted between two milling spindles.

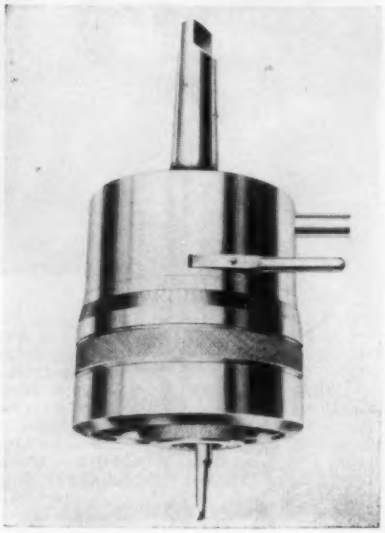


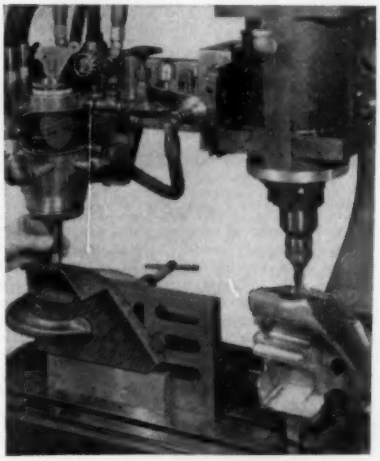
VERTICAL MILLING HEAD—*Master Manufacturing Co, Ave A & Easley St, Hutchinson, Kan.* Capable of slab milling and handling carbide tools. It not only provides a geared milling head, but an adjustable spindle for compound angles.

MILLING AND DIESINKING MACHINE—*British Industries Corp, International Machinery Div, 164 Duane St, New York 13, NY.* Incorporates high-speed vertical milling spindle coupled to a tracer by a patented pantograph arrangement. Motion of cutter follows accurately that of tracer, both horizontally and vertically. Reduction is variable from 1½:1 down to 7:1. Spindle speeds, 7, range from 800 to 8000 rpm; horizontal motion of worktable is 12x8 in., vertical motion, 9 in. Model 3-DS.



TRACING ATTACHMENT—*S&S Machinery Co, 140 53rd St, Brooklyn, NY.* Automatic milling of three dimensional contours with copying and tracing attachment. Eight geared spindle speeds range from 290 to 3250 rpm.





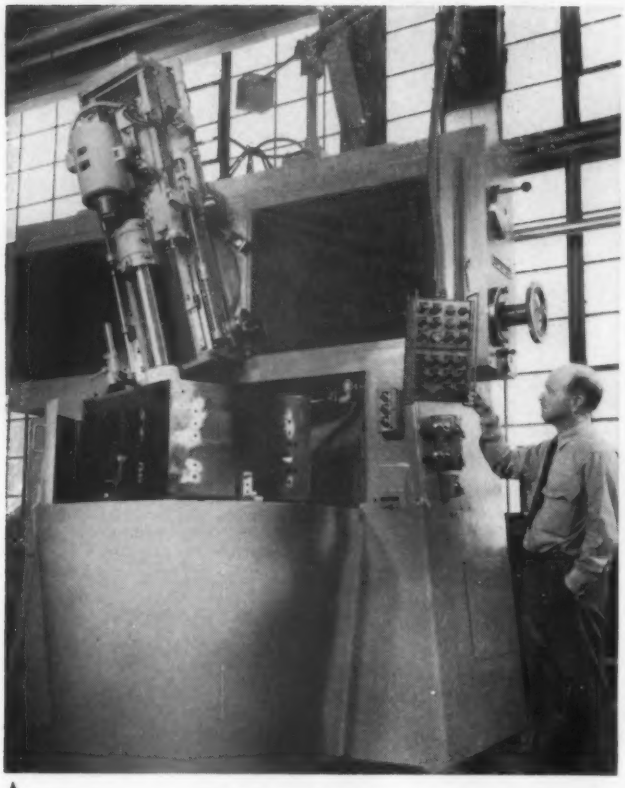
HYDRAULIC TRACER — *True-Trace Sales Corp, 2303 Chico Ave, El Monte, Calif.* Model A-3D 3-dimensional hydraulic tracer traces 360° in all directions. Any combination of traverse, transverse, and vertical motion is simultaneously controlled by one tracer spindle. The tracer converts a miller or other metal-cutting machine tool into a high-precision, high-production duplicator and is said to insure tolerances to as close as 0.005 and 0.0005

PROFILING HEAD—*Bansbach Machine Co, 221 N Cicero Ave, Chicago 44.* Model 30 permits turning of both internal and external profiles, provided forms allow toolbit to be engaged in continuous cut. Used in turning polynomial profiles.

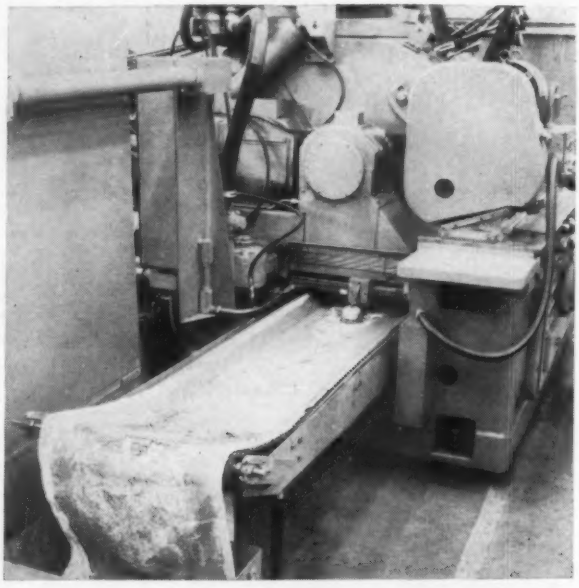
American Machinist 1955 PRODUCTION PREVIEW

GRINDING, HONING, LAPPING

summarized from descriptions published during 1954

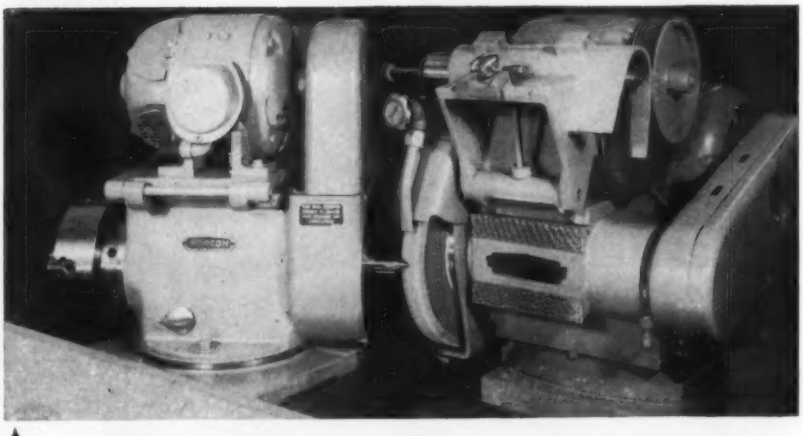


VERTICAL UNIVERSAL GRINDER —*Springfield Machine Tool Co, Springfield, Ohio.* Hydraulically actuated machine has swing of 52 in. Designated model 3TR, it does nine operations in one chucking. Only one angle setting of the head, up to 45°, is necessary for male and female parts. Work spindle speed, either 88 or 176 rpm, is governed by flow control valve. Sheffield setup is used for accurate size control of bores, both straight and taper. Spark-out and final size are individually adjustable to handle holes from 2 to 40 in. in diameter, and from 1 to 18 in. above the face plate.



MULTI-WHEEL GRINDER—*Norton Co, Worcester 6, Mass.* Type CM-1 had as one of its development problems the elimination of the grinding swarf produced by several grinding wheels cutting simultaneously. To provide continuous and automatic sludge removal, Norton engineers adapted certain components of the Delpark filter made by the Industrial Filtration Company of Lebanon, Indiana.

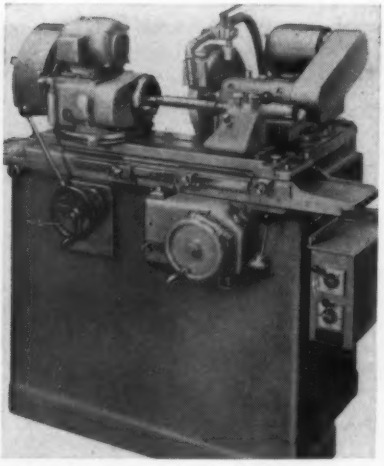
GRINDER ATTACHMENT — *Detroit Reamer & Tool Co, 2830 E Seven Mile Rd, Detroit.* Model 500 gear-driven workholder rotates and oscillates blanks with 2, 3, 4, 6, 8, or 12 flutes.



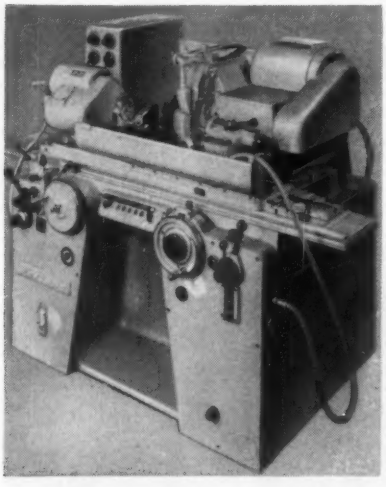
UNIVERSAL GRINDER — *American Herforder Corp, 1546 N Orleans St, Chicago 10.* Cresta machine performs ID and OD grinding on same setup. Workhead, wheelhead, and table are universal, permitting straight or taper grinding. Wheel is 10 x 1 x 3 in., driven by 1¼-hp, two-speed motor. Work speeds are 125 to 610 rpm, work size is 4 x 10 in. Three-jaw, 4-in. chuck, 9/16-in. collets, or live and dead centers may be employed.

UNIVERSAL GRINDER—*Norton Co, Worcester 6, Mass.* 12-in. type U-4 has swiveling headstock with dog-drive plate on one end for conventional grinding and 5-in. D-1 camlock nose on other end for mounting chucks. Work-speed range is infinitely variable from 40 to 400 rpm. Quick changes from and to internal grinding are made by hinged-bracket internal-grinding spindle.

SLIDE GRINDER—*Norton Co, Worcester 6, Mass.* Type CV-4 semiautomatic angular wheel slide grinding machine rapidly grinds thrust surfaces and adjacent diameters simultaneously in single, automatically controlled plunge grind. Eliminates separate operation normally necessary when similar jobs are done in conventional cylindrical grinders. Available in 10- or 14-in. swings and in 36-, 48-, or 72-in. work lengths.

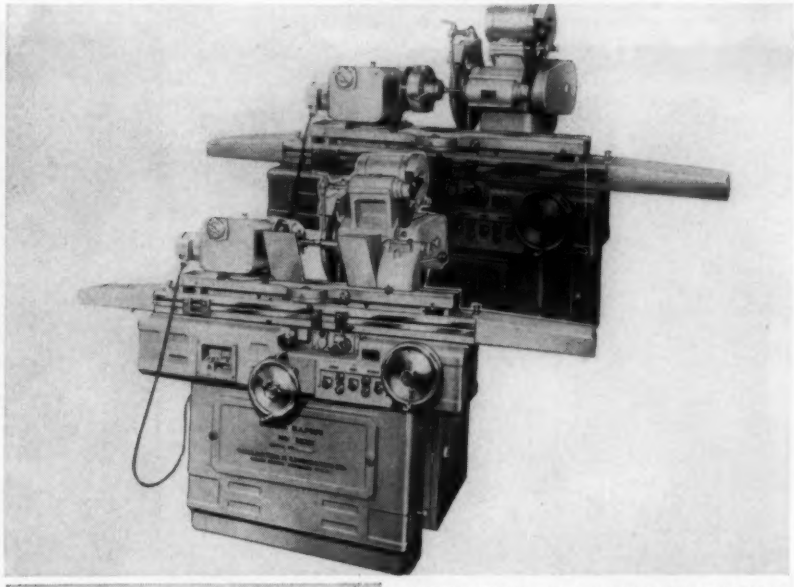


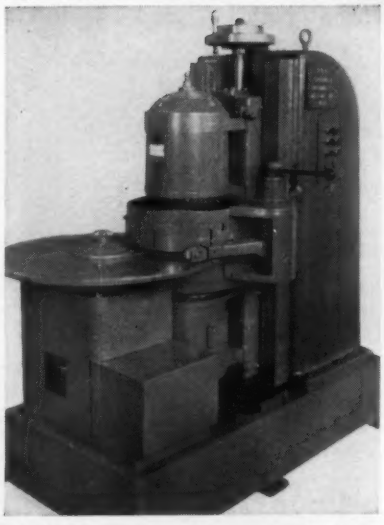
CYLINDRICAL GRINDER—*American Herforder Co, 1546 N Orleans St, Chicago 10.* Stock up to 4 in. in dia and 12 in. long. Workhead takes No. 1 Morse centers, live and dead, as well as a 4 in., 3-jaw tapered draw-in chuck, or quick-change collets up to ⅝-in. capacity. Workhead speeds vary from 125 to 610 rpm; work spindle carries a 12x1x3-in. wheel powered by 1¼ hp.



CYLINDRICAL GRINDER — *Cosa Corp, Chrysler Bldg, New York 17, NY.* Preselected table speed (2 to 25 sfpm); rapid wheel approach; infinitely variable infeeds; control of predetermined grinding depth; hydraulic wheel-dressing copying attachment. Capacity is 4x12 or 4x20 in.; workhead speed from 75 to 750 rpm.

CYLINDRICAL GRINDER—*Kurt Orban Co, Inc, 205 E 42nd St, New York 17, NY.* Automatic sizing control of cylindrical grinding operations to a concentricity within 0.000080 in. on long runs, with full compensation for wheel wear and thermal expansion, is said to be provided in the Schaudt MPS grinder. The sizing control is adaptable to work from 3/16 to 4 in. in dia and to either traverse or plunge-cut grinding. Four models provide max distance between centers of 20, 30, 40, and 59 in. All models have a center height of 8 in. The workhead provides 8 spindle speeds from 12 to 300 rpm; grinding wheel speed is 1100 rpm.



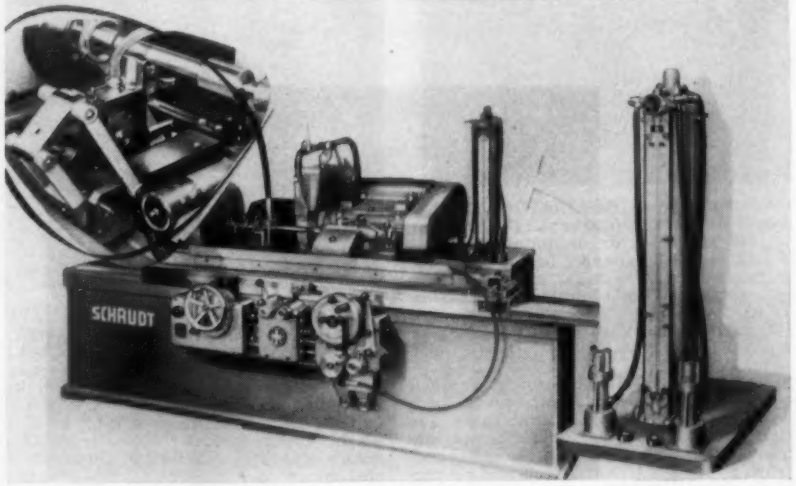


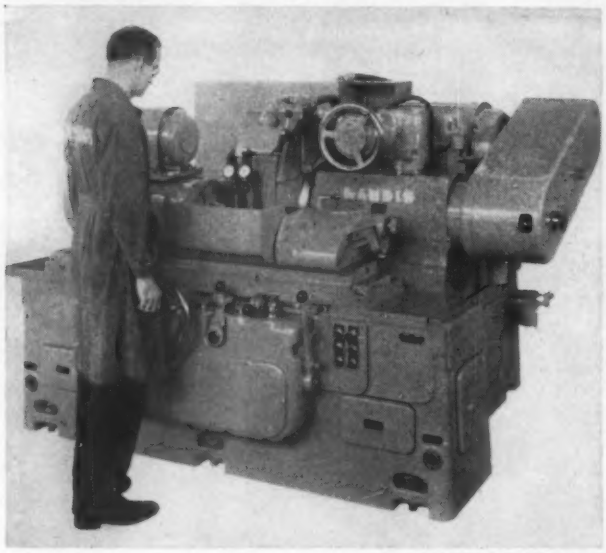
DOUBLE - SPINDLE GRINDER — *Gardner Machine Co, Beloit, Wis.* No. 2V-18 grinds two parallel faces of small work. Hand-loaded into power-driven work carrier. Carrier speeds fom ⅛ to 1 rpm. 18-in.-dia abrasive disks driven by 5-hp motors. Hand-operated dresser.

INTERNAL - EXTERNAL GRINDER —*Gallmeyer & Livingston, 346 Straight Ave, Grand Rapids, Mich.* No. 1230; hydraulically operated table has speeds from 3 to 50 ipm. Workhead unit has variable speeds from 0 to 400 rpm with live or dead-center drive. Steadyrest will handle work to 3-in. diameter. Internal grinder quill is ⅝-in. size to take wheels to 1-in. diameter, at 24,000 rpm. Work between 8 and 12 in.-OD can be internally ground without disturbing external wheel. External grinding wheel is 14 in. in diameter, 1 in. thick, with 5-in. hole, working at 6500 sfpm.

DOUBLE GRINDER — *Besly-Welles Corp, Beloit, Wis.* Vertical-spindle double-wheel grinder feeds from hopper automatically at 1200 to 1400 per hr. Model 905-18-in. holds 0.002 in. for size, 0.0003 in. for parallelism.

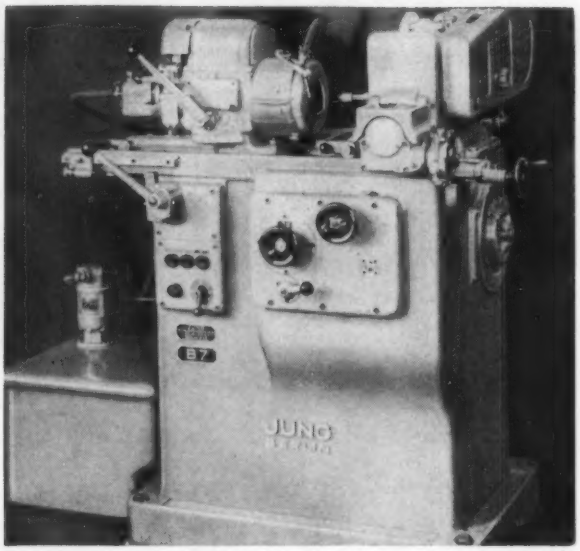
CYLINDRICAL GRINDER — *Kurt Orban Co, Inc, 205 E 42nd St, New York 17, NY.* Schaudt PSA Ultra is equipped with an automatic sizing control attachment which maintains accuracies within 0.0001 in. Distance between centers is 40 in.; height of centers, 8½ in.; grinding wheel diameters are up to 29½ in. with width of 3⅛ in. Sizing control can be used in traverse or plunge-cut grinding on workpieces up to 4 in. in dia.





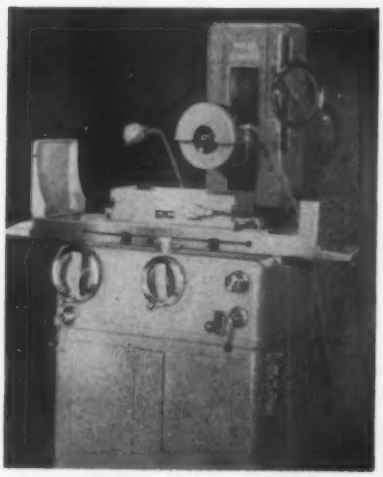
LARGE-WHEEL GRINDERS—*Landis Tool Co, Waynesboro, Pa.* Series of plain hydraulic precision cylindrical grinders to finish parts requiring use of wheels to 10 in. wide for infeed grinding, spaced wheels for multiple diameter or profile grinding. Made in both 10- and 14-in. swings. Wheel is driven by 25-hp motor; workhead by 1½-hp motor.

CYLINDRICAL GRINDING MACHINE—*Marac Machinery Corp, 1819 Broadway, New York 23, NY.* Fritz Werner Model 270A, is designed for 10-1¼-in. wheel and can grind up to 10 in. in length between centers. Workhead can be swiveled to 90° and is adaptable for dead center work, three-jaw 3½-in.-dia. chuck, or spindle-mounted collets.



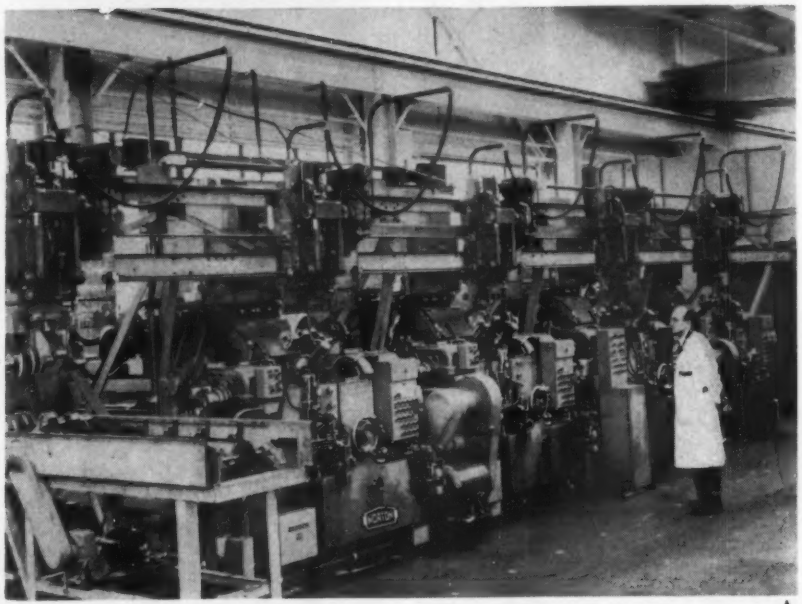
INTERNAL GRINDER—*Marac Machinery Corp, 1819 Broadway, New York 23, NY.* Jung B7 is for internal cylindrical shapes; interchangeable grinding spindles rotate at 35,000 rpm; table traverse is variable to 120 spm. Can be furnished with face-grinding attachment, with 75,000-rpm spindle, and for plunge grinding only.

GRINDER PEDESTAL — *Edward Blake Co, 435 Cherry St, West Newton, Mass.* Cabinet style with two doors at front and interior shelf for storage of chamfer grinders and accessories.



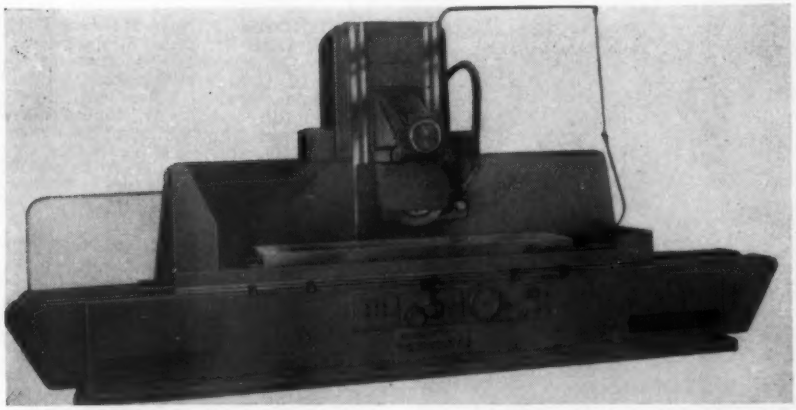
HYDRAULIC SURFACE GRINDER—*Boyar-Schultz, 2110 Walnut St, Chicago 12, Ill.* Built to accommodate 6x18-in. chuck, actual capacity is 7¼ x 19 in. It takes an 8 x ⅝ x 1¼ or 8 x ¾ x1¼ in. grinding wheel; vertical capacity is 17 in. from table to center of spindle. Longitudinal hydraulic feed varies from 0 to 50 fpm.

SURFACE GRINDER—*Boyar-Schultz Corp, 2110 Walnut St, Chicago 12.* 6x12 with hydraulic longitudinal table action Hydraulic valve for reciprocating movement; machine can be changed from hydraulic to hand feed and return in a few seconds.



SNAGGING GRINDER — *Standard Electrical Tool Co, 2480 W Sixth St, Cincinnati 4.* Double-end infinitely variable speed. Takes two 20-in-dia by 3-in.-face wheels. Vitrified wheel speed to 6500 sfpm. Resinoid wheels to 9500 sfpm. 10-hp motor. Magnetic starter with separate start-stop pushbutton station. 4 x 9-in. work rest at each wheel.

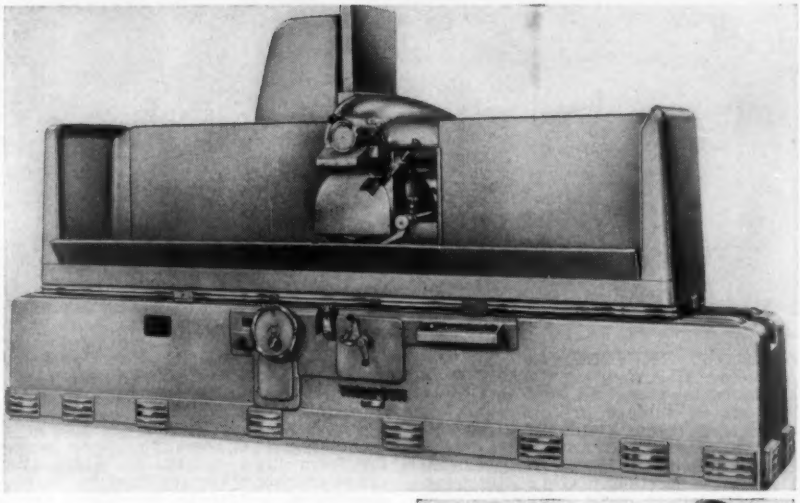
CRANKPIN GRINDER — *Norton Co, Worcester 6, Mass.* Automated transfer type four-station four-wheel machine for V-8 shafts. Production runs to one shaft per minute. Incorporated are interlocks and controls obtained by central station. Work dia senses completion of cycle from own accuracy. Consideration has been given to the ability to cut out single station for servicing.



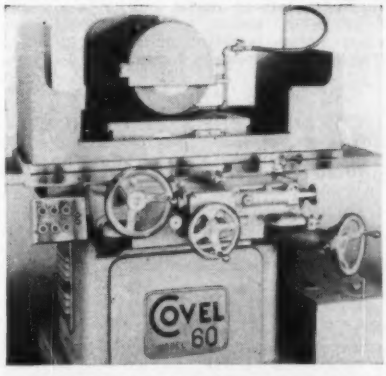
PRODUCTION SURFACE GRINDER —*Gallmeyer & Livingston Co, 346 Straight Ave, Grand Rapids, Mich.* With hydraulic feed and cross traveling head. Speed with 20-in.-dia wheel is 6000 sfpm. Table speed varies up to 150 fpm. Self-contained motor-driven coolant system is standard.

SURFACE GRINDER — *Thompson Grinder Co, Springfield, Ohio.* Type F: crossfeeding wheelhead grinding with periphery; small increments of downfeed with wide increments of crossfeed at 70 fpm table speed: Integral motor drive to spindle, 1800/3600 rpm; 1½-hp motor with safety interlock to permit use of 7 or 12-in.-dia wheel.

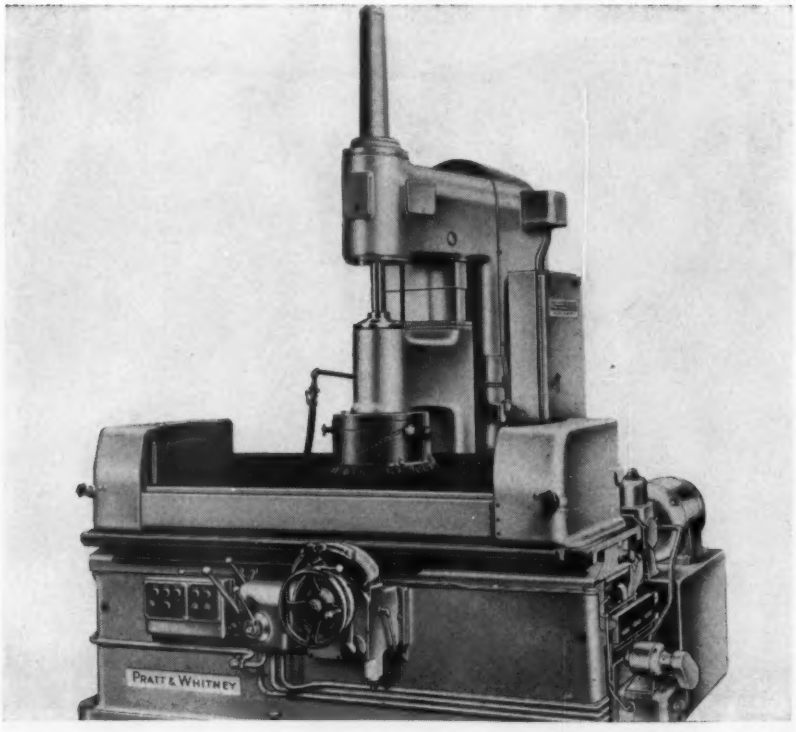
HYDRAULIC SURFACE GRINDERS —*The Thompson Grinder Co, Springfield, Ohio.* Type CX incorporates crossfeeding wheelhead with horizontal spindle grinding with periphery of 20-in. wheel; full range of sizes from 30x26x72 to 36x36x24 in. Table speeds are 10 to 100 fpm; hydraulic wheel truing feed is 6 ipm with hydraulic rapid traverse at 240 ipm. Grinding wheel speed is 6000 fpm.



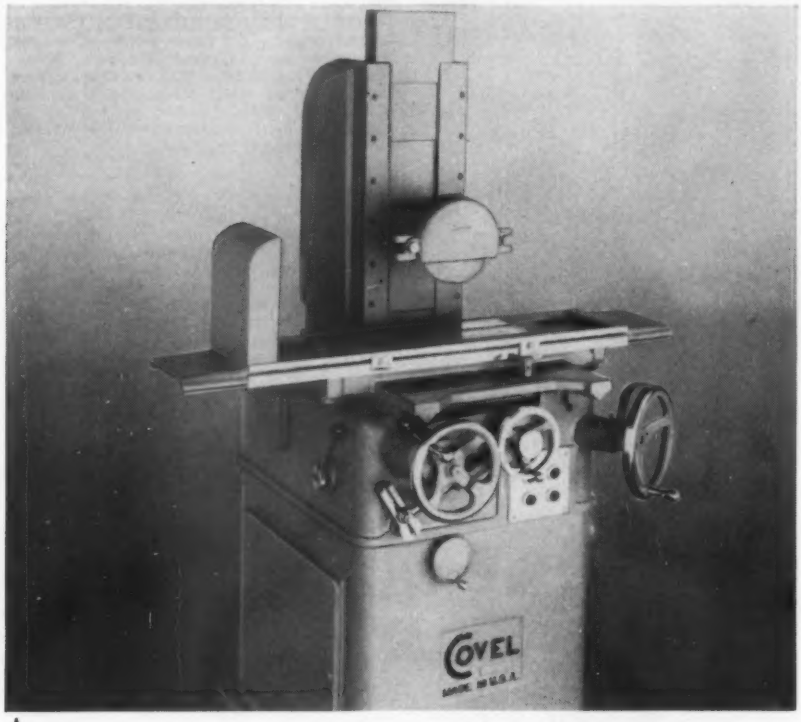
PRODUCTION GRINDERS—*Thompson Grinder Co, Springfield, Ohio.* Line of Type C, ranging in size from 12 x 48 to 24 x 168 in., was designed for faster, more accurate and economic grinding of parts ranging from a tool steel broach bar to a machine tool way. Features include 20-in.-dia wheel crossfeeding with horizontal spindle and grinding with periphery of wheel, power elevation and hydraulic rapid traverse with safety stops, speed variable from 10 to 100 fpm, and cross feed control in increments of 1/32 in. to one half of wheel width per table reverse.



SURFACE GRINDER—*Covel Mfg Co, Benton Harbor, Mich.* Model No. 60 has work surface of 14x24 in., crossfeed width of 15 in., table travel of 27 in., and vertical work capacity of 18 in. Table speed ranges from 10 to 90 fpm. Other features: elevating handwheel located below table level, built-in truing device, closed hydraulic circuit, powered elevation, and automatic lubrication.



SURFACE GRINDER—*Pratt & Whitney, Div Niles-Bement-Pond Co, West Hartford 1, Conn.* 14-in. hydraulic vertical grinder available in 14x36 or 14x60-in. size with solid ring wheel. Table speeds are infinitely variable from 2 to 100 fpm; table traverse is operated by two hydraulic cylinders with speed controlled by metering oil in return lines. Power is provided by 30-hp motor.



SURFACE GRINDER—*Covel Manufacturing Co, Benton Harbor, Mich.* Designed for gage and form tool work, as well as surface grinding, has reciprocating table available with hand or mechanical feed. Its longitudinal table travel is 20 in., transverse table travel, 7 in. Vertical travel of the grinding wheel is 15 in. It will grind work 6x18x15 in. under a 7-in. wheel powered by an 1-hp motor-driven spindle. Table speed ranges from 15 to 50 fpm.

HYDRAULIC SURFACE GRINDER—*Jones & Shipman Ltd, 130 Elmslie St, Ville LaSalle, Montreal, Canada.* Infinitely variable traverse rates, 10 to 80 fpm; variable cross traverse rates from 0.015 to 0.15 ips; hand crossfeed graduated in 0.0001 in.; vertical wheel feed with adjustments in 0.0001 in. div. Wheel crushing attachment.

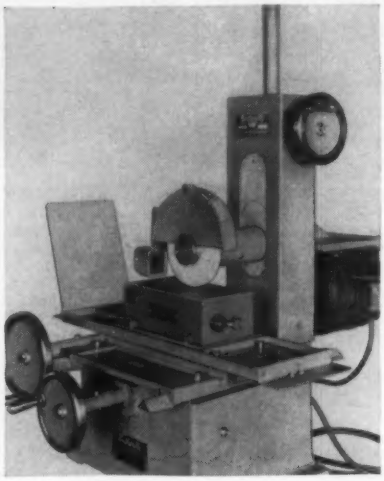
SURFACE GRINDER—*Abrasive Machine Tool Co, Dunellen Road, East Providence 14, RI.* Model 1218 Hydrabrasive has gross-feed backlash eliminator working in combination with saddle ball ways, so saddle movement reads positively on cross-feed dial.

GRINDERS—*Delta Power Tool Div, Rockwell Manufacturing Co, 432 N Lexington Ave, Pittsburgh 8.* Single-phase and three-phase standard 7-in. grinders and buffers. Single-phase have capacitor-start motors. All models, except 550v, have been changed from single to dual voltage.

ROTARY SURFACE GRINDER — *Hancor, Inc, 262 Mott St, New York, NY.* Two rotary magnet tables carried on knees. Sliding on bed is grinding head with vertical spindle, traversed by power over each table in turn. Headstock spindle is shifted hydraulically into grinding position.

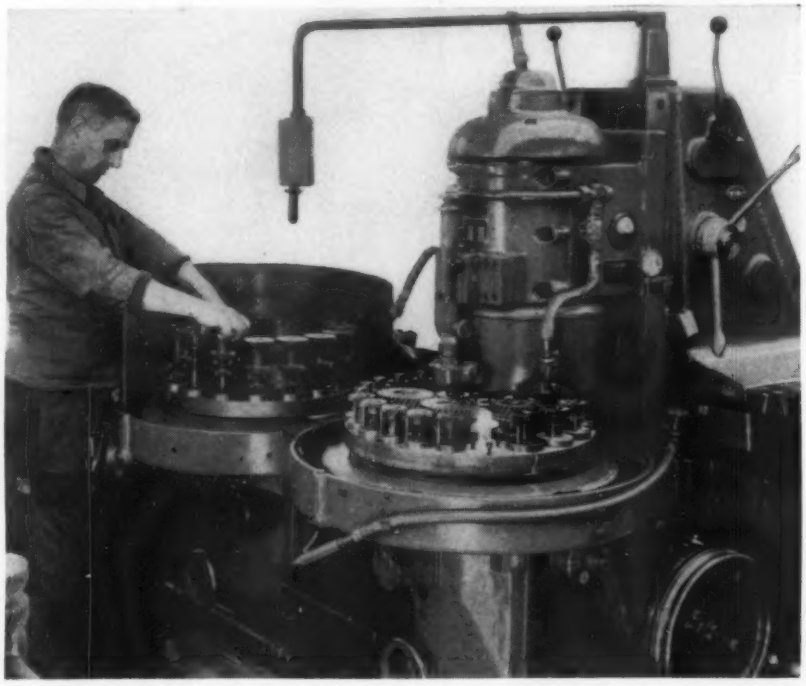
SURFACE GRINDER—*The DoAll Co, 254 N Laurel Ave, Des Plaines, Ill.* Model D10 is designed for standard attachments to make grinding automatic. Belt-driven spindle handles 3-hp drive, transmits power to wheels ranging from 10x¾ to 14x2 in. Automatic operations can be achieved by introduction of: automatic downfeed; automatic crossfeed reverse; crush-form-grinding table control; and automatic skipfeed. Table speed control provides range from 1 ipm to 75 fpm; range normally is 5 to 75 fpm.

JIG GRINDER—*Fosdick Machine Tool Co, Cincinnati 23, Ohio.* Combination machine for automatic positioning to ±0.0001 in. Grinds cylindrical and tapered holes, conical holes with taper in either direction, any contour—by built-in angular and indexing device in main spindle, and by slot-grinding attachment. Speeds from 12,000 to 60,000 rpm; spindle speeds—90, 120, 180, and 240.



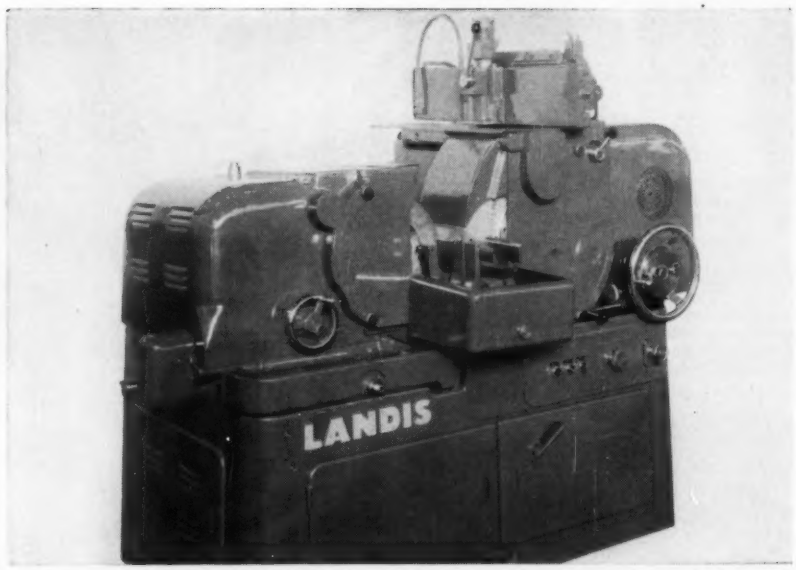
SURFACE GRINDER—*Harvey Manufacturing Corp, Germanow-Simon Machine Co, Inc, 408 St Paul St, Rochester 3, NY.* SG-48 hand-feed bench unit has table working capacity of 5½x9x7½ in. under the 6-in. wheel; table travel is 10 in. longitudinally, 6 in. transversely; vertical travel is 7½ in. Spindle speed is 3000 rpm.

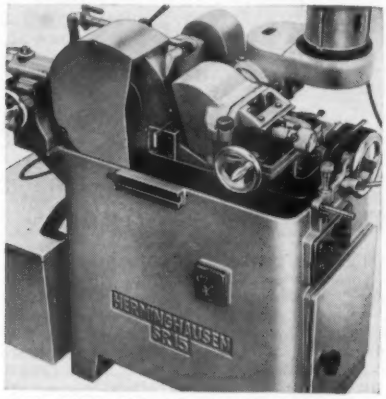
CLEARANCE-ANGLE GAGE — *McDonough Mfg Co, Eau Claire, Wis.* Set on drills by angle indicator which shows 8°, 10°, and 12° clearance. Drill sizes from ⅛ to 2½ in.



CENTERLESS GRINDER — *Landis Tool Co, Waynesboro, Pa.* Model 12½ grinds work with max dia of 6 in.; max grinding wheel width, 10 in. Capacity of through-feed or in-feed work rests is ½ to 3½ in. (standard), 3 to 6 in. (heavy duty). Grinding wheel dia and hole is 24x12 in.; regulating wheel dia and hole, 14x5 in., speed variable by rheostat control from 12 to 100 rpm.

CENTERLESS GRINDER — *Landis Tool Co, Waynesboro, Pa.* Redesigned No. 12 has automatic cycles and loaders, will handle work to 3½-in. dia with std work rests, 4¾ in. with heavy-duty rests. Wheels are 20-in. dia, 8 in. wide, with 15-hp motor. Hydraulic rapid infeed and slow grinding feed.





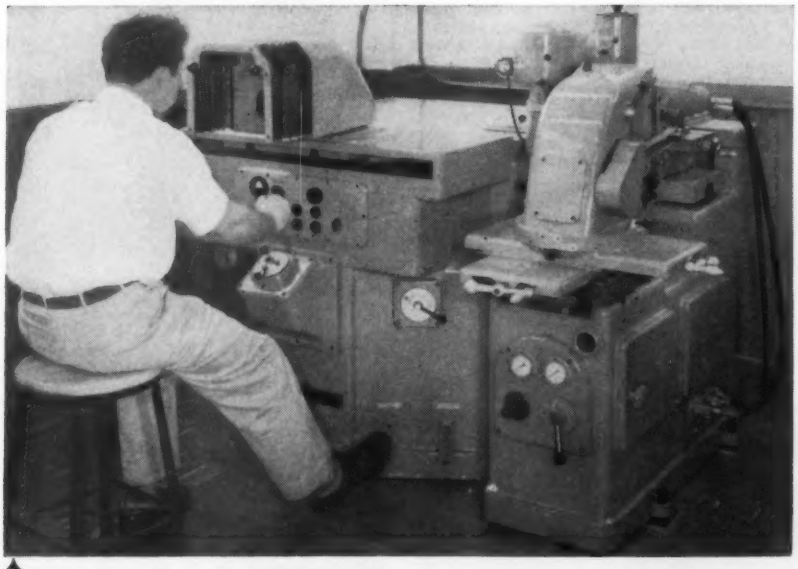
CENTERLESS GRINDER—*American Herforder Corp, 1546 N Orleans St, Chicago 10, Ill.* Operates as through-feed, in-feed, crushed-form, or templet diamond-dressed form-grinding machine. Capacity from 1/16 to ⅝-in. diameter on steel; 12x2½x5-in. grinding wheel is driven by 3-hp motor and 7-in. feedwheel by separate ½-hp geared motor with speeds of 21, 42, and 320 rpm.

CENTERLESS GRINDER—*American Herforder Corp, 1546 N Orleans, Chicago 10.* Model 20, made by Herminghausen Works, of Germany. Will do tapered work by both infeed and through-feed methods. Capacity 1/32 to 1¼ in. 12 x 4 x 5-in. wheel powered by 5-hp motor. Cost of basic unit: $4000.

GRINDER—*The Sheffield Corp, Dayton 1, Ohio.* Model No. 123 Micro-Form takes cylindrical work and circular form tools up to 8 in. in dia. and length. Finish grinds directly from drawing. Wheelhead has spindle speed of 3000 rpm; workhead speeds from 40 to 360 rpm.

PROFILE GRINDING MACHINE — *Eric R Bachmann Co, 27-11 41st Ave, Long Island City 1, NY.* Manufactured by Ludw. Loewe & Co, Berlin. Shadograph screen of 20x20 in.; grinding wheel, work, and line drawing are visible at all times. Working area, 2⅜ x 10 in., provided through longitudinal and cross-displacement of working table.

PLUNGE FORM GRINDER—*Jones & Lamson, Springfield, Vt.* Model E automatic for chucking work, center work, or shoe-type grinding; crush wheel, or diamond truing, with automatic or manual handling. Max dia of swing over table is 12 in.; max length between centers is either 8½ in. or up to 32 in.

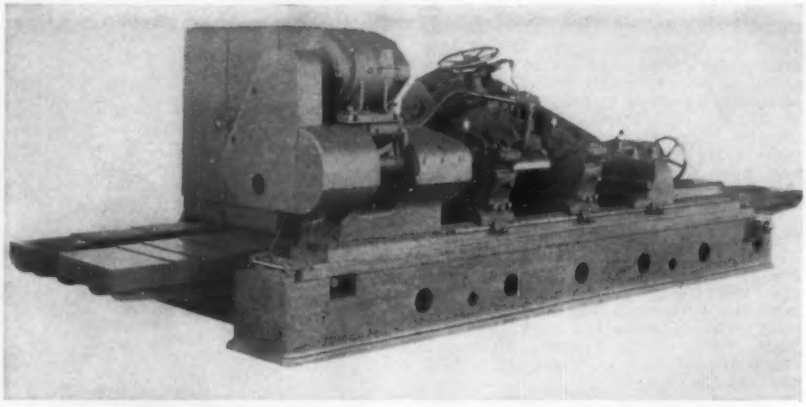


OPTICAL PROFILE GRINDER—*McGlynn Hays Industries, Inc, Belleville 9, NJ.* Profile is drawn on plastic sheet, from 10:1 to 50:1. Projection table is moved hydraulically, controlled by 2 levers.

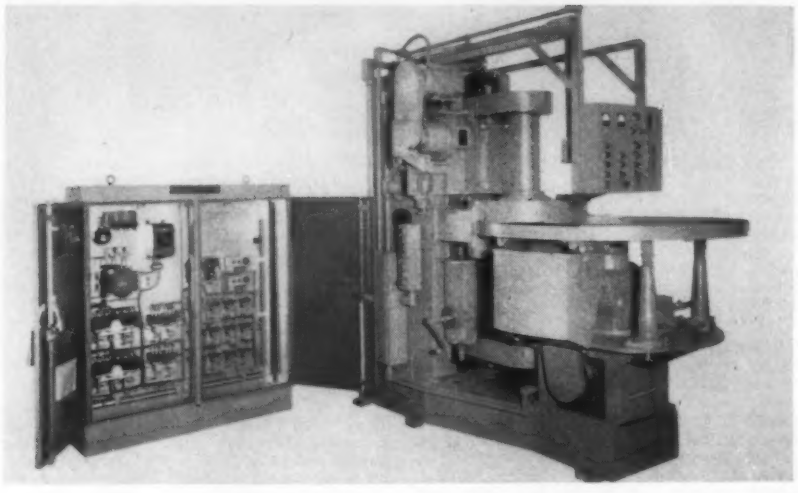
ROLL GRINDER—*Quality Industries, Inc, 3716 Clark Ave, Cleveland 9.* Mounts on machine to be serviced. Chain drive is powered by 1/3-hp motor; feeds automatically along the work.

DISK GRINDER — *Gardner Machine Co, Beloit, Wis.* Horizontal disk free-hand-grinds single flat surface of small parts. Spindle is V-belt driven by 5-hp motor. Hand-operated bar dresser.

ROLL GRINDER — *Landis Tool Co, Waynesboro, Penna.* Traverses wheel across face of rolls to 25,000 lb in weight. Between-centers distance ranges from 120 to 240 in. 36-in. diameter wheel is driven by 40-hp motor. Wheelhead traverse variable from 2 to 100 ipm. Work speeds, at V-belt-driven headstock, variable from 12 to 100 rpm. Work drive is 7½ or 10 hp, depending on diameter of roll neck.



SPRING GRINDER — *Besly-Welles Corp, Beloit, Wis.* Automatic cycling controls work on No. 929-30/60 vertical-spindle grinder. Grinding is done dry after springs are loaded into the slowly rotating feed wheel. Does 1920 per hr.



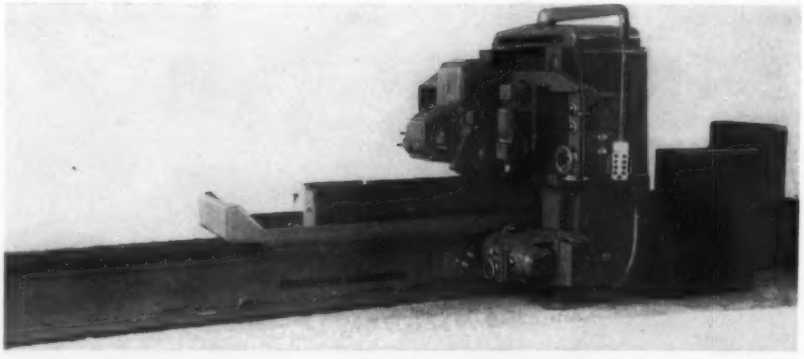
HORIZONTAL PLATEN GRINDER—*Curtis Machine Corp, 1300 E Second St, Jamestown, NY.* Has both platen and contact roll, is equipped with a serrated rubber contact belt and claimed to be the fastest-cutting platen grinder. The grinder, designated Model KGB 310, with its contact belt running between the platen and the abrasive belt, now provides flat grinding with efficient cutting action. Belt speeds are 5000 and 12,000 sfpm.

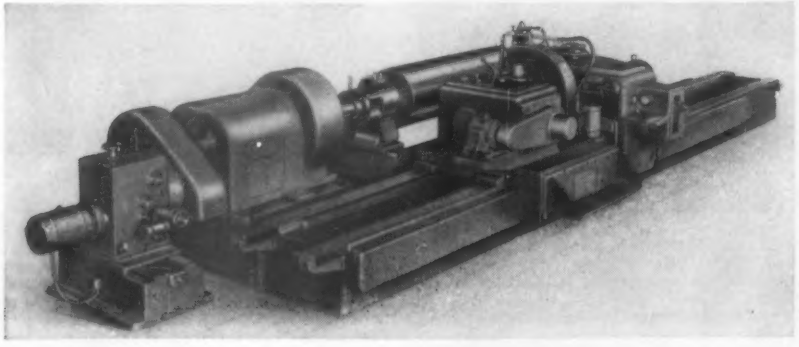
GRINDER — *Curtis Machine Corp, Jamestown, NY.* Model PB-1 with swing frame for use with buff or abrasive belt can be suspended and brought to heavier work, or rigidly mounted as variety grinding and polishing unit. 3-hp motor; 3400 rpm; max surface speed of 7700 sfpm.

IDLER — *Carborundum Co, Niagara Falls, NY.* 61-in. universal unit for backstand grinding and polishing. Belt widths from ½ to 8 in. can be used. Model 432 for floorstand; 431 for floor, wall, or bench installation.

MACHINE-TOOL-BED GRINDER—*Parker Machine Co, Inc, 158 Pioneer St, Brooklyn 31, NY.* Schmaltz Type APF double-column way grinders, which can also be used as regular surface grinders, are available in four sizes ranging from 31½ in. to 59 in. in grinding widths, 59 in. to 26 ft. 3 in. in grinding lengths, with a standard grinding height of 39 in. They are powered by motors up to 30 hp and accommodate pieces up to 17,600 lb. Speeds of the reciprocating table run up to 100 fpm.

GRINDER ATTACHMENT — *Binghamton Die & Machine, Inc, 44 Charlotte St, Binghamton, NY.* For cylindrical work; can be set up on surface-grinder table and will swing 6 in. and take parts 7¼ in. long between centers.

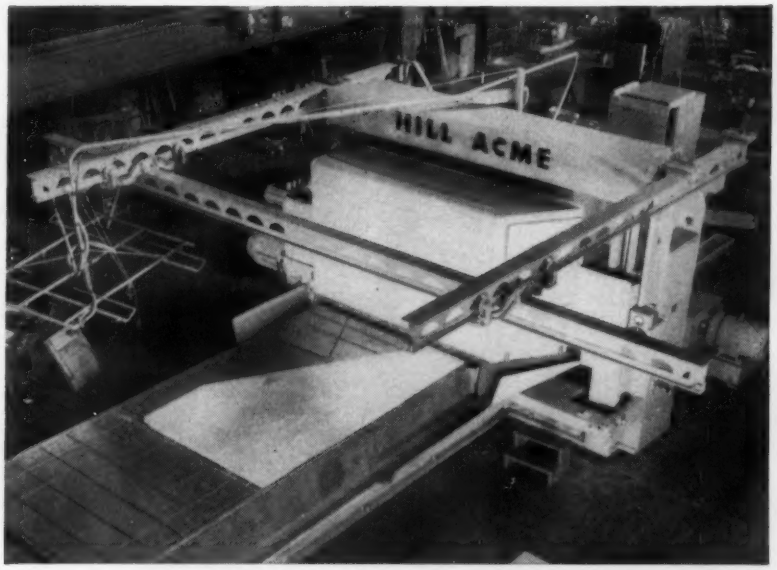




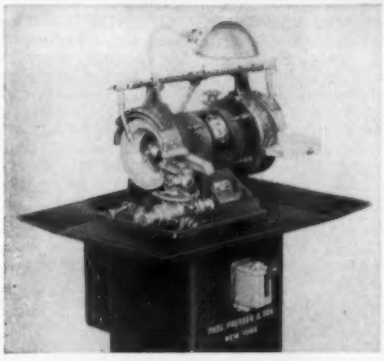
BACKSTAND IDLER—*Fenlind Engrg Co, Rockford, Ill.* Heavy-duty unit with 6-in. plastic wheel has two remote control arms. Width of idler wheel permits belt-width range of ¼ to 6 in.

ROLL GRINDERS—*Parker Machine Co, 158 Pioneer St, Brooklyn 31, NY.* Schmaltz roll grinders are available in two types: type WR with stationary wheelhead and reciprocating table for roll diameters to 31 in. and crowned lengths to 8 ft 2 in.; type WRG with reciprocating wheelhead and stationary worktable for roll diameters to 63 in. and crowned lengths to 26 ft. Crowning mechanism was designed to eliminate backlash.

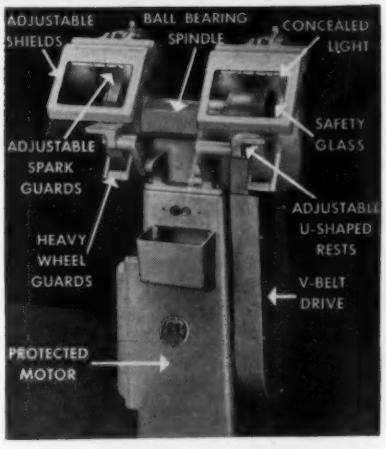
BELT GRINDER—*Hill Acme Co, 1201 W 65th St, NW, Cleveland 2.* Grinds and polishes compound tapers on flat aluminum plates, using endless belt 138 in. long, 86 in. wide. Has 250-hp dc motor and positive hydraulic reciprocating table. Coarse-grit belts for heavy stock removal easily replaceable by fine-grit for polishing to 10 mu in. Precision setting for depth within 0.00025 in. possible. Holds work on vacuum chuck.



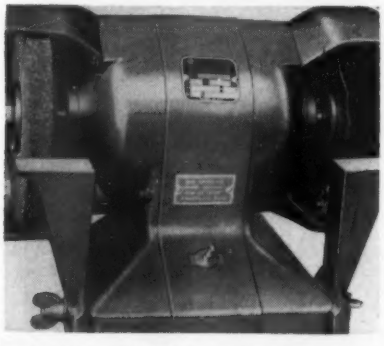
BELT GRINDER — *Industrial Div, Lempco Products, Dunham Rd, Bedford, Ohio.* Model 544 micro-finishing machine for carbide tool grinding saves up to 80% by eliminating diamond wheel grinding. Angular table settings read directly on protractor to simplify finishing all tool edges.



WET GRINDER—*Thomas Prosser & Son, 120 Wall St, NYC, NY.* Model APW embodies all features of Model AP and is equipped with separate motor driven coolant pump, pan, settling tank, piping, valves, adjustable nozzles, and flexible neoprene spray guards. As tool is rocked back and forth across wheel face, feed of tool toward grinding wheel is controlled by micrometer feed knob graduated in thousandths of an inch.

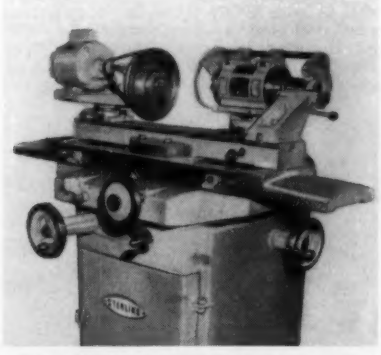


GRINDER—*South Bend Lathe Wks, 425 E Madison St, South Bend 22, Ind.* Motor protection from abrasive dust and better clearance for wheel sides. Power for 8-in. wheels is ½ hp; for 10-in. wheels, ¾ hp.

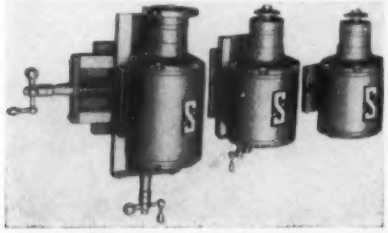


BENCH GRINDER—*The Black & Decker Mfg Co, Towson 4, Md.* ¼-hp 6-in. standard ball-bearing unit for intermittent use. Wheel size, 6-in. dia with ⅝-in. base and ½-in. hole.

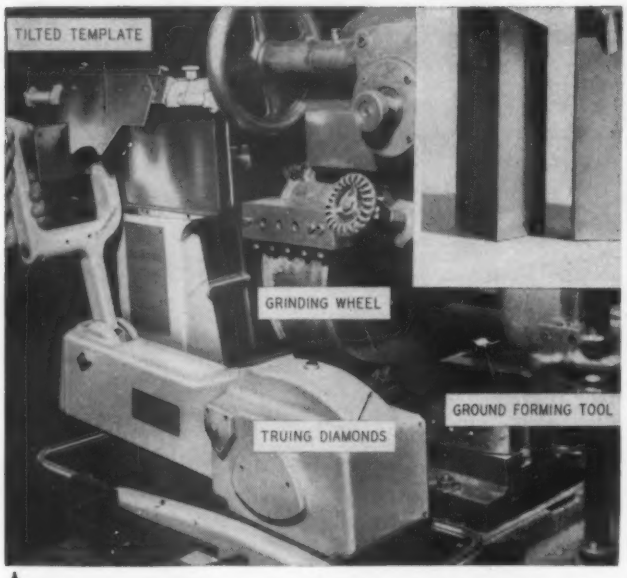
GRINDING FIXTURE—*Harig Mfg Corp, 5757 W Howard St, Chicago, Ill.* Grinds all types of regular and irregular contours concentric with perforator shank within ±0.0002 in. Due to an exclusive radius generating feature, fixture is particularly adapted to carbide grinding. Twenty-four 15° graduations on a rotating index plate assure grinding accuracy.



UNIVERSAL GRINDER—*McDonough Manufacturing Co, Eau Claire, Wis.* Model G-2 tool and cutter grinder has anti-friction table. Improvements on raising and lowering mechanism and on infeed mechanism provide finer control of grinding. Capacity of Model G-2 is same as Model G with 10¾-in. swing over table, 27 in. between centers, 20½-in. table travel.



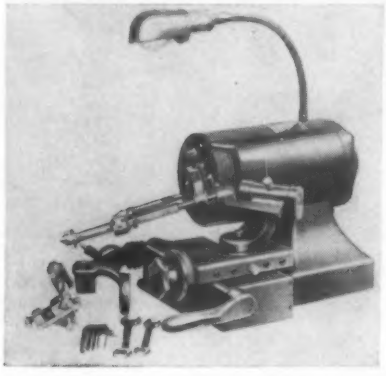
MOTORIZED SPINDLES—*The Standard Electrical Tool Co, 2480 W 6th St, Cincinnati 4, Ohio.* Line of motorized spindles and vertical spindle grinders. Optional use of wheels clamped between wheel flanges, or with backing plate for using Type 2 cylinder of plate-mounted cup grinding wheels.



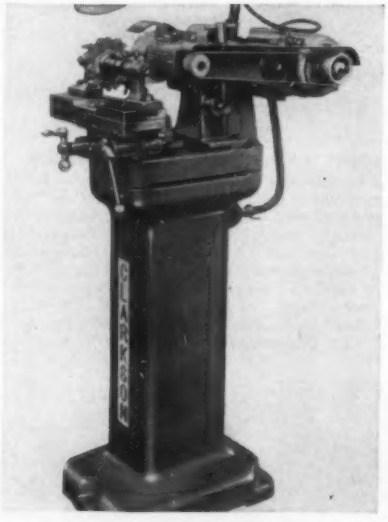
TOOL GRINDERS—*Pratt & Whitney, Div Niles-Bement-Pond Co, West Hartford 1, Conn.* Diaform wheel-forming attachment simplifies grinding of relief angles on forming tools. Available in three models, it works on pantograph principle.

CARBIDE TOOL GRINDER — *The Standard Electric Tool Co, Cincinnati 4, Ohio.* Solid carbide platen permits micro-finish of end, top, and side clearance angles on single-point tools. Right side of machine consists of three pulleys with a 54x4-in. abrasive belt. Left side has 6-in.-dia plate-mounted cup-type wheel for the roughing operation.

WET TOOL GRINDER—*Standard Electrical Tool Co, 2480 W Sixth St, Cincinnati 4.* 30-in. wheel, 5-hp motor, table tilt 15° above, 30° below horizontal. 10-sq-in. worktable.

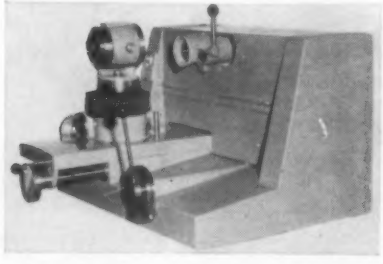


DRILL GRINDER — *Brown-Brockmeyer Co, Dayton, Ohio.* Handles twist drills from 0.062 to ½-in. dia, grinds any included angle from 80 to 160°. Micrometer leadscrew positions drill. Built-in 1/3-hp motor. Bench and pedestal models available.



CUTTER GRINDER—*Clarkson, Inc, 320 Ontario St, Toledo, Ohio.* Cutters can be set and completely sharpened in from 15 to 25 min. Powered by ½-hp motor, grinder is always operated from the front.

TOOL GRINDER — *McDonough Mfg Co, Eau Claire, Wis.* Model G-2 has improvements in the raising and lowering mechanism and the in-feed mechanism, for better accuracy and control, and has relocated controls for operator convenience.



TOOL GRINDER — *McDonough Mfg Co, Eau Claire, Wis.* Model RK-2 has workhead centers and universal vise, but no table. Optional equipment includes collet attachment, one-cutter-grinding fixture, indexing head, and radius-grinding fixture.

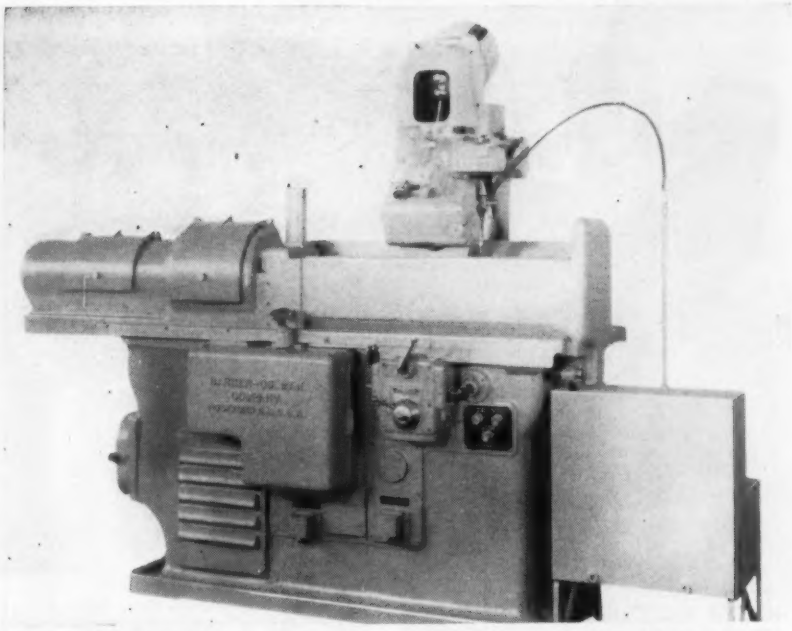
TOOL AND CUTTER GRINDERS—*Parker Machine Co, Inc, 158 Pioneer St, Brooklyn 31, NY.* Imperia No. 2 universal tool and cutter grinder (10x20 in.) is arranged for wet grinding, cylindrical grinding, and internal grinding. Four ac motors are furnished, one for the grinding wheel head, one for automatic longitudinal table reciprocation, one for work rotation during cylindrical grinding, and one for coolant pump. The table can be swiveled 49° to either side. The grinding wheelhead can be swiveled 90° to either side.

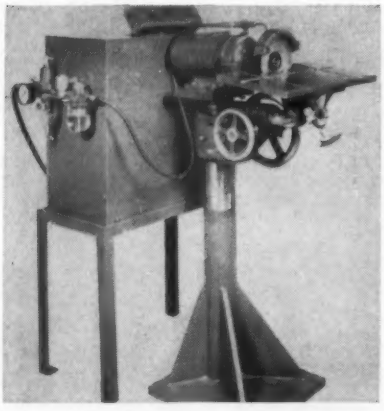
CARBIDE TOOL GRINDER—*Standard Electrical Tool Co, 2480 River Road, Cincinnati 4, Ohio.* 6-in. heavy-duty unit in bench model or with floor pedestal. The ¾-hp 3600-rpm motor is adapted for either single-phase or three-phase current. Heavy worktables on each side, are adjustable 10° above to 20° below horizontal axis.

SHARPENING MACHINE — *Barber-Colman Co, Rockford, Ill.* No. 10-12 hydraulic unit accommodates wet grinding of HSS and carbide-tipped hobs and form-relieved cutters. Handles tools with straight or helical flutes, shell- or shank-type, up to 10-in.-dia by 12-in. face width.

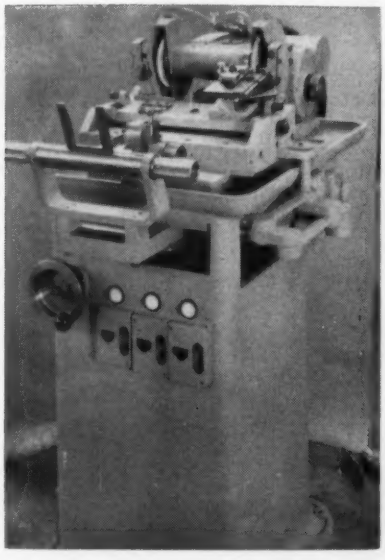
HOB-SHARPENER — *Barber-Colman Co, Rockford, Ill.* Handles hydraulic HSS and carbide-tipped hobs and form-relieved cutters, sharpening tools with straight or helical flutes, shell or shank type, up to 6-in. dia by 5-in. face. Once settings have been made, machine automatically indexes and feeds.

FORM RELIEF GRINDER — *Royal Oak Tool & Machine Co, 29800 Stephenson H'way, Royal Oak, Mich.* New principle produces axial relief only, radial relief only, or any combination of the two. Motion is on a plane, and tool moves into wheel on center for entire grind. Cams permit relieving 1 to 16 flutes.

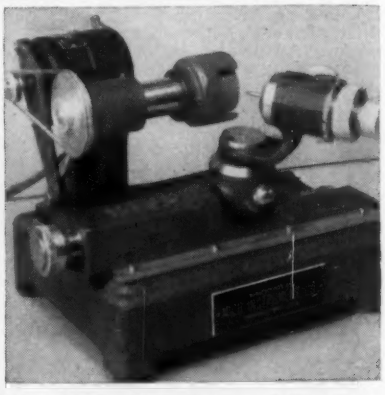




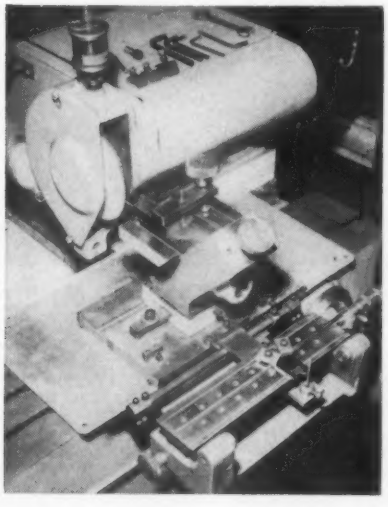
TOOL GRINDER—*Ohio Metal Working Products Co, 1836 Euclid Avenue, Cleveland 15, Ohio.* Single-point carbide tool grinder operates at 10,800 rpm to combine rough and finish grinds into one operation. Grindng fluid is applied by Metalloid fixed-volume mist applicator.



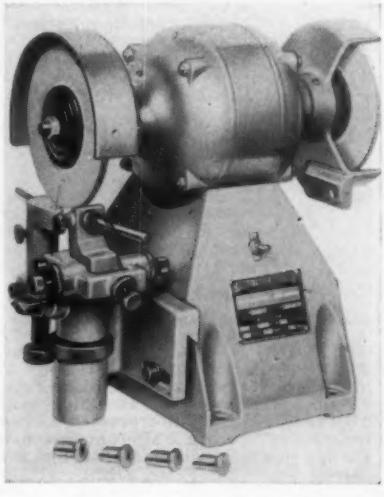
FORM-TOOL GRINDER—*High Precision Products Co, Westfield, NJ.* Pantograph mechanism working from master stylus or templet reproduces two form tools by means of two grinding wheels. Will grind a form 1 in. wide and as deep as 11/16 in.



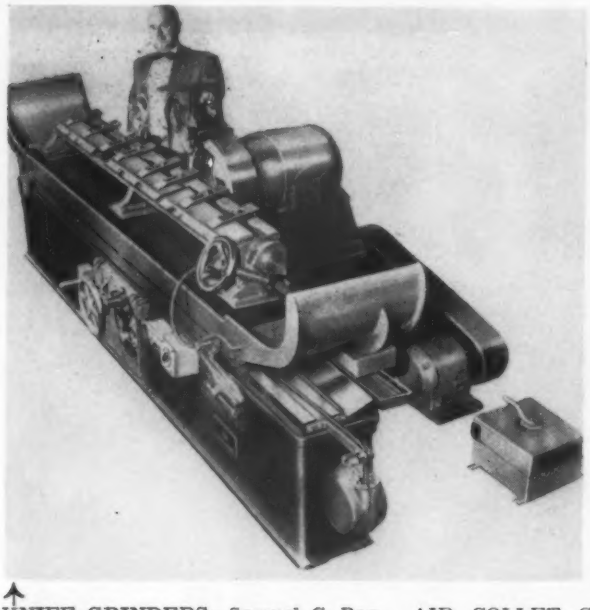
CUTTER GRINDER — *Mico Instrument Co, 80 Trowbridge St, Cambridge, Mass.* Primary function is grinding of engraving cutters, but device can be used to grind and sharpen special end mills, countersinks, counterbores, and lathe toolbits. The rotatable spindle of the grinding head accommodates conventional spring collets up to ⅜-in. capacity. Operating speed is 7500 rpm; grinding wheel is 1½x¼x⅜ in.



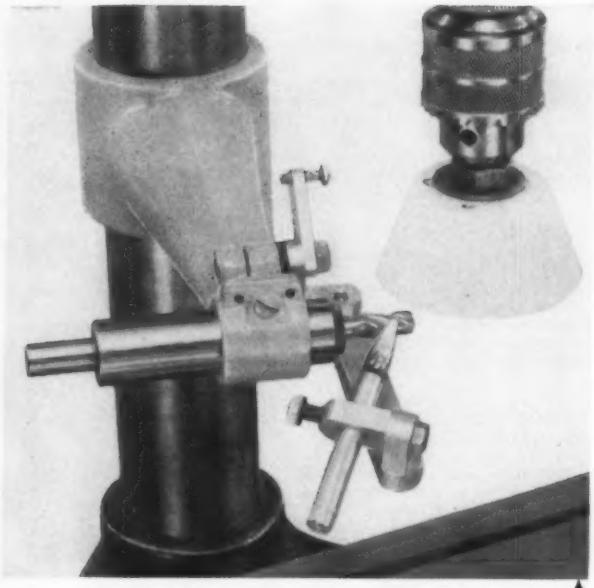
DRILL GRINDERS — *Union Twist Drill Co, Athol, Mass.* Sizes 1-50, A-U, and 3/64-⅜ in. are ground to crankshaft points by 6-in. wheel, with 6-in. general-purpose wheel at other end of spindle.



TOOL GRINDER — *Redco Tool Div, Red Lion Cabinet Co, Red Lion, Penna.* Suitable for standard tools, and, with profiler attachments, for special profiling tools and cutters. Profile attachment, with templet and guide, maintains tolerances as close as 0.0002 in. on cutting edge.



KNIFE GRINDERS—*Samuel C Rogers & Co, 191 Dutton Ave, Brooklyn 10, NY.* Air-clamping device provides instantaneous clamping in grinding position. Automatic infeed operates in conjunction with timing device and can be set within limits of 0.0005 to 0.005 in. grind per table cycle.



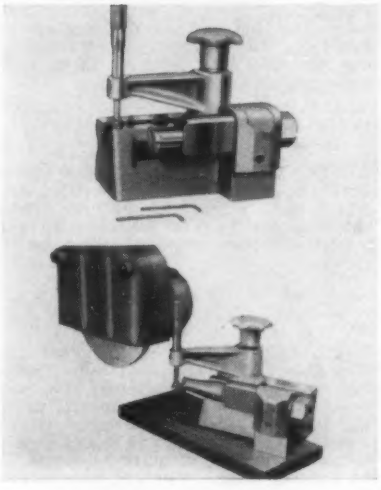
AIR COLLET CLOSER—*Wil-Numat Corp, 3713 S Robertson Blvd, Culver City, Calif.* Convert grinders into more universal units, adapts them quickly for 5C collets. Gives positive control over collet runout to insure maximum concentric efficiency that grinder is maintaining.

GRINDING ATTACHMENT—*Waterborg Machinery Co, 2830 Rapids Drive, Racine, Wis.* Clamped to drillpress column, device permits sharpening ends and flutes of end mills with cup wheel held in drillpress chuck.

TAP GRINDER—*Henry P Boggis & Co, 706 E 163rd St, Cleveland 10, Ohio.* Model 1300 has capacity from No. 0 machine screw taps to 1½-in. hand taps.

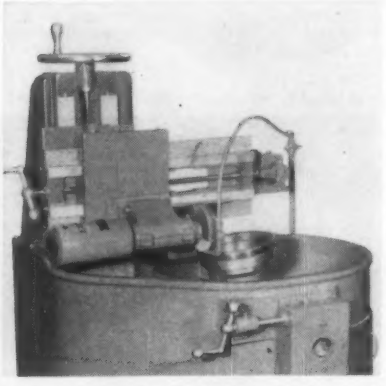
CUTTER GRINDER — *Carl Hirschmann Co, Inc, 30 Park Ave, Manhasset, NY.* For regrinding copy-milling cutter for Nassovia die sinker; also for single and multi-edged cutters. Max dia of cutter is 13/16 in.; max clamping dia is 1 in.

KNIFE GRINDER — *Hanchett Manufacturing Co, Big Rapids, Mich.* Grinds bevels of straight knives and shear blades, particularly chipper, hog, and barker knives and heavy-duty shear blades. Has a 60-in.-dia segmental wheel with 5-in.-dia spindle.

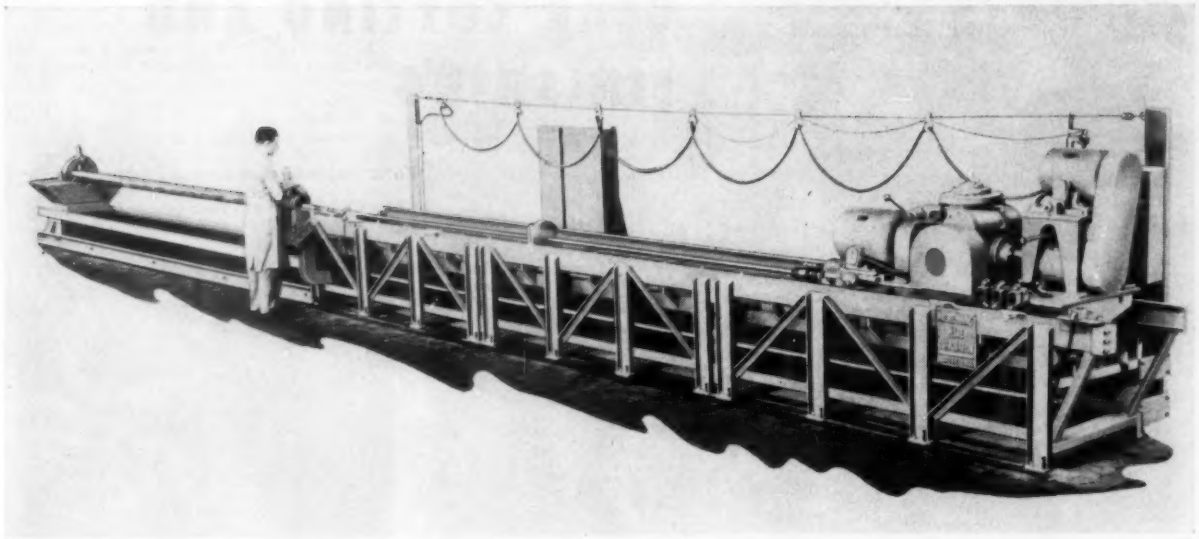


GRINDING FIXTURE — *Bryant Chucking Grinder Co, Springfield, Vt.* Shoe-type internal centerless grinding fixture insures uniform wall thickness and concentricity to 0.0001 in. Work rotates on carbide-faced shoes.

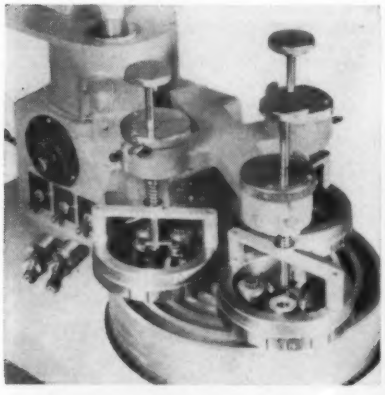
GRINDING FIXTURE — *Scully-Jones & Co, 1901 S Rockwell St, Chicago.* Allows proper offset when sharpening circular form tools and recessing tools. Top face adjusts mircrometer to centerline of cutter. Micrometer arm swings to any position, for gaging, and can be removed. Price, $130.



SLITTER KNIFE GRINDER — *Hanchett Mfg Co, Big Rapids, Mich.* Top and bottom slitter knives and all types of circular knives. Grinding wheel assembly support has rigid column type of mounting for vertical adjustment to all knife thickness. Gusher type motor-driven coolant pump with screen. Grinds top and bottom slitter knives to 0.0005 for concentricity, with surface finishes approximately 25 micro-inches.



HONING MACHINE — *Micromatic Hone Corp, 8100 Schoolcraft, Detroit 4, Mich.* Machines in No. 6000 series stroke any length over 5 ft. Head rides on two rails, is mechanically reciprocated with gear and rack. Seven combinations of four spindle speeds provide from 44 to 350 rpm; maximum reciprocating speed is 60 sfpm.

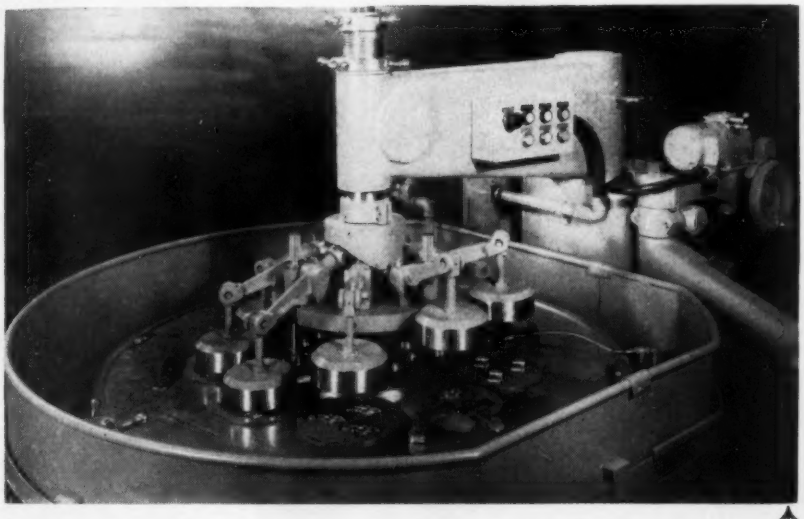


LAPPING MACHINE—*Garrett Supply Co, 3844 Santa Fe Ave, Los Angeles, Calif.* For single-point carbide tools; tests indicate it is possible to produce 3-5 mu in. finishes. Diamond wheel grinding is unnecessary.

FLAT LAPPING MACHINE—*Spitfire Tools Co, 2931-35 North Pulaski Rd, Chicago 41, Ill.* Incorporates revolving lapping plate 24 in. in dia, 2 in. thick; ½-hp motor; and heavy steel base. As many as four operators may work at one time and, with small pieces, each operator may lap two pieces at once.

LAPPING METHOD—*Crane Packing Co, Dept AMN, 1800 Cuyler Ave, Chicago 13, Ill.* Consists of providing lap plate with series of annular grooves to accommodate stem of workpiece and allowing shoulders to ride top of lap plate during cycle.

ROLLER LAPPING MACHINE—*Spitfire Tool Co, 2931-35 N Pulaski Rd, Chicago 41, Ill.* To lap metal, glass, or plastic plugs, rods, or pins from ⅛ up to 6 in. in dia. Rollers are parallel, 12 in. in length, one 3 in. in dia, other 6. Larger roller has dual internal air chambers vented by 4 openings for each chamber.



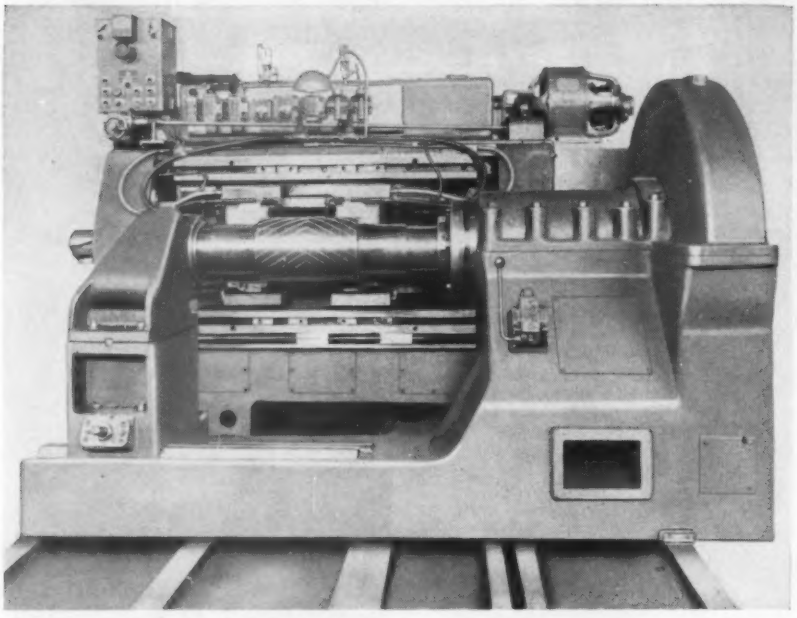
HONING UNIT—*Superior Hone Corp, 1607 Elreno St, Elkhart, Ind.* Pedestal model combination honing machine and coolant unit features spindle speeds from 400 to 1000 rpm. Model JCP; honing range from 0.185 to 2.500 in.

FLAT LAPPING MACHINE—*Norton Co, Worcester 6, Mass.* No. 36-F Hydrolap; for continual and complete lapping of work in single pass. Operation is interrupted only to true bonded abrasive lap, done by diamond held in variable-speed, power-operated truing arm.

American Machinist 1955 PRODUCTION PREVIEW

GEAR CUTTING AND FINISHING

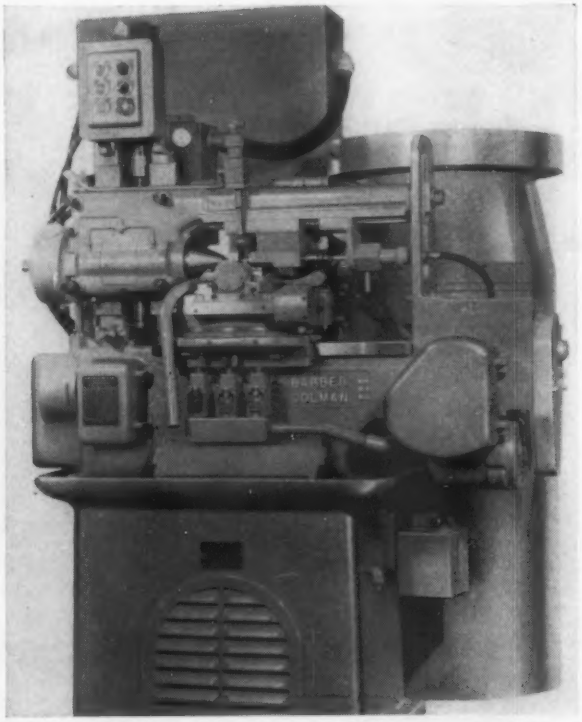
summarized from descriptions published during 1954



GEAR GENERATOR—*Farrel-Birmingham Co, Inc, Ansonia, Conn.* Improvements include rapid selection of speeds and feeds, easy adjustment of cutters, positive control of infeed or depth of cut. The rotary feed of cutters and work is controlled by a separate hydraulic fluid motor through a double reduction gear. The twin-head generator is available in four models.

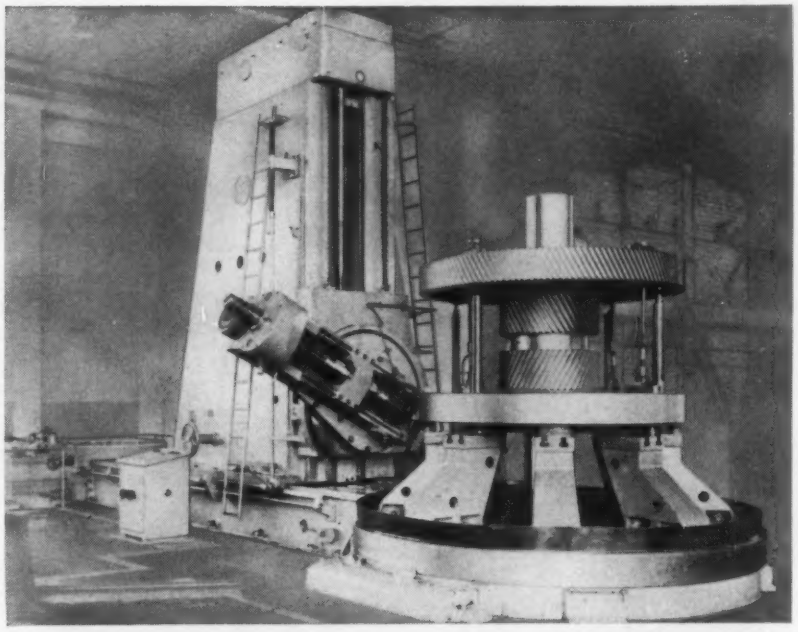
GEAR HOBBER—*Morey Machinery Co, Inc, 383 Lafayette St, New York 3.* Single-spindle Hydrax hobs spur and helical gears by either "climb" or conventional hobbing; automatic cutting cycle. Hobs up to 7-in. dia and 7-in. width can be used; hob spindle runs at speeds ranging from 84 to 600 rpm. Plunge and vertical feeds from 1/16 to 5 ipm can be obtained.

GEAR HOBBER—*Michigan Tool Co, 7171 E McNichols Rd, Detroit, Mich.* Model 1445 has engineering changes, retaining "plunge" cutter feed and automatic workholding tailstock. A single-spindle hobber, it machines spur and helical gears at selective speeds up to 570 rpm. Either climb or conventional hobbing can be utilized.



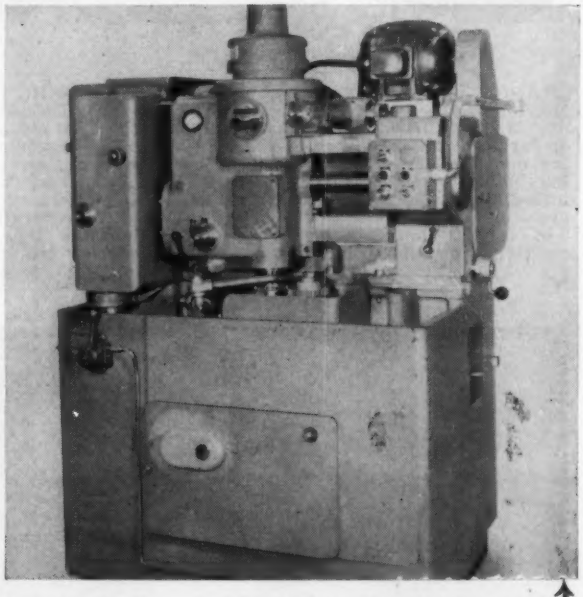
HOBBING MACHINE—*Barber-Colman Co, Rockford, Ill.* Automatic No. 6-10 for automatic transmission gears. Machine is horizontal with solid over-arm. Feed, index, and hob speed are mechanically governed. Hob shifter moves hob to new position after each gear is cut. Metered hydraulic pressure assures positive arbor mounting.

GEAR HOBBERS—*Kurt Orban Co, Inc, 205 E 42nd St, New York 17, NY.* Schiess RF hobbers cut spur, helical, and herringbone gears and worm wheels. Four models have capacities 9 ft 10 in., 13 ft 2 in., 18 ft, and 23 ft. Moving column is adjustable for diameter of gear and depth of tooth. The swivel head is carried on a hob saddle traveling on the vertical ways and balanced by counterweights.



CONVENTIONAL AND CLIMB HOBBING—*Morey Machinery Co, Inc, 383 Lafayette St, New York 3, NY.* David Brown MT60 machine can be installed as a universal machine for cutting spur, helical, spiral, and worm gears or spline shafts. Maximum pitch is 1½ in.; max hob diameter, 8 in.; max hob length, 10 in.; max center distance between hob and work, 36 in.; minimum distance 3½ in.; diameter of table bore is 4 in. Hobbing speeds range from 21 to 107 rpm. Unit uses a No. 5 Morse taper and a 10-hp motor.

GEAR-HOBBING MACHINE—*Transmares Corp, 15 William St, New York 5, NY.* Pfauter Type P250, will cut gears to 10 in. dia with max pitch of 7 or up to 8 in. dia at 5 diametral pitch. Max hob speed is 260 rpm; max feed 0.16 ipr. It is equipped with hydraulic climb-hobbing unit and automatic plunge-longitudinal-hobbing equipment.



AUTOMATIC LOADER — *National Broach & Machine Co, 5600 St Jean, Detroit 13.* Red Ring loader handles long-shaft unsymmetrical gears on standard rotary shaving machines. Has built-in gaging device, magazine feed, air-powered loading fingers, and discharge chute. Handles a 14-diametral-pitch, 3¼-in.-OD, 1-in. wide gear, with integral shaft 17½ in. long at rate of 180 gears per hour.

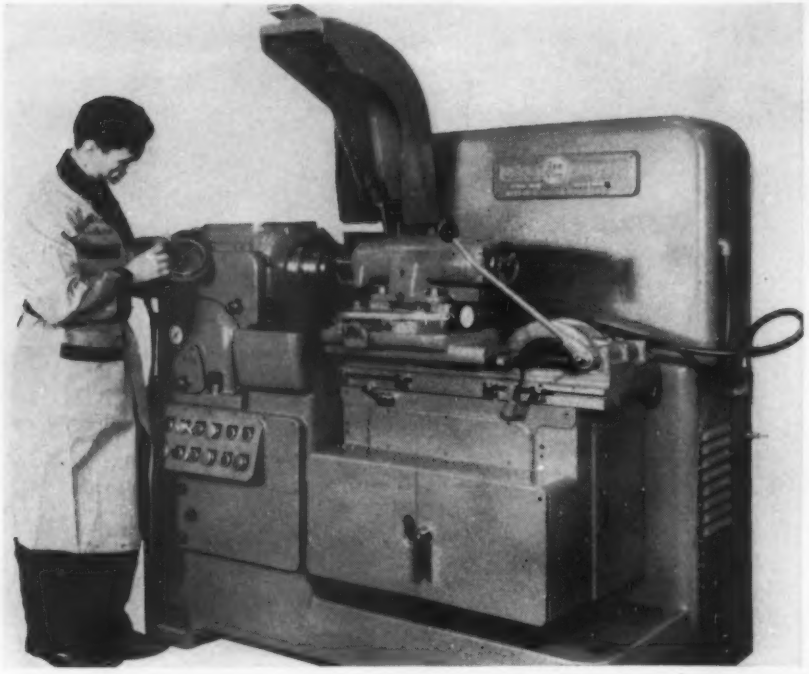
SPLINE ROLLER—*Michigan Tool Co, 7171 E McNichols Rd, Detroit 12.* Roto-Flo machine forms splines, oil grooves, serrations, similar shapes, on external parts by cold-working process. 3 sizes; shaft OD's from ⅞ to 1⅝ in.; spline lengths up to 1¾ in.

SURFACE HARDENING—*The Gleason Works, 1000 University Avenue, Rochester 3, NY.* Electronic control is used on machines where oxy-acetylene flames traverse each individual tooth. Radiation pyrometer is focused on the tooth and receives radiant energy. An electronic balancing mechanism translates energy into forces which control travel of burners along tooth.

BRUSHING METHOD — *The Osborn Manufacturing Co, Cleveland, Ohio.* Method for burring large-size gears and similar large products, using Osborn Model No. 5 brushing machine with automatic features, is reportedly resulting in more than ten times previous work output.

GEAR SHAPER—*The Fellows Gear Shaper Co, Springfield, Vt.* No. 4GS has capacity of 6-in. PD and 2-in. face width for external and internal spur and helical gears. Max DP is 5/7 for spur, 6 for helical. Machine uses 4-in. PD cutter on 3⅝-in-dia spindle reciprocated through 2½-in. rock-shaft driven from crankshaft. Drive to crankshaft from main drive shaft is through pick-off gears, ranges from 98 to 635 spm. Rotary feed of cutter and work is governed by pick-off gears providing feeds from 0.008 to 0.024 in. per stroke.

GEAR PRODUCTION MACHINE—*National Broach & Machine Co, 5600 St Jean, Detroit 13.* Vibrating hopper and straight-line feeder, in and out gages, loader, standard diagonal Red Ring rotary gear shaving machine, and discharge belt conveyor unit. Gears fed by main conveyor to vibrating hopper; shaving, gaging, sorting, and discharge operations proceed automatically.

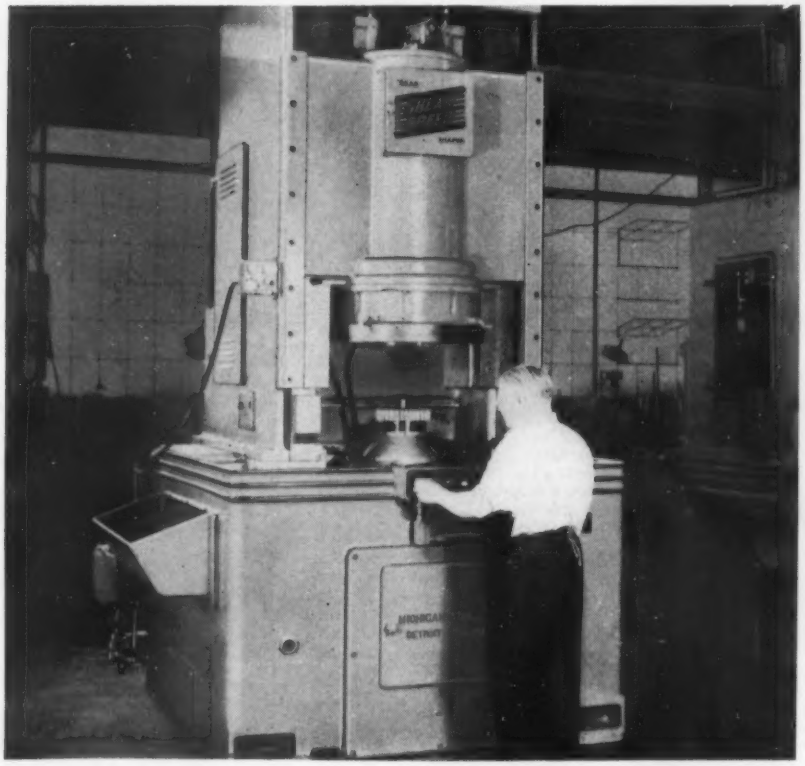


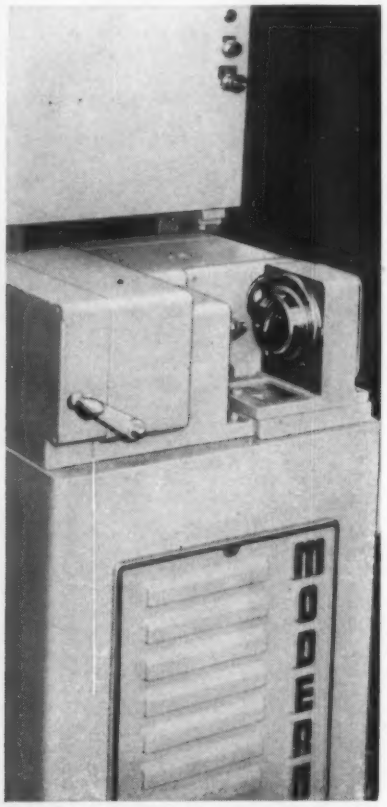
GEAR SHAVER—*National Broach & Machine Co, 5600 St Jean Ave, Detroit 13, Mich.* Operations on internal spur and helical gears from 3 to 12-in. pitch diameter; Model GCR shaves gears having up to 4 diametral-pitch teeth and face widths up to 2½ in. Workhead can be located in positions up to 1½° each side of a vertical centerline to permit taper shaving operations. Optional mounting permits head to pivot upward at a 30° angle to cutter centerline. A 3-hp motor powers the work spindle, and cutter reciprocating mechanism is driven by ½-hp motor; change gears are provided for work spindle rotation and cutter reciprocation drives.

HORIZONTAL GEAR-SHAVER—*National Broach & Machine Co, 5600 St Jean Ave, Detroit 13, Mich.* GCJ-36 finishes teeth on spur and helical gears with 36-in. pitch diameter and shafts to 142 in. long. It is equipped with power-driven headstock and center tailstock traversed by rack and pinions. A 5-hp motor drives headstock through worm-gear drive and change gears. Power crossfeed is provided by 3-hp motor through reduction gearing, change gears, and leadscrew. Two speeds are provided.

SHAPER—*Michigan Tool Co, 7171 E McNichols Rd, Detroit 12.* Shear-speed line Model 18105-HD for cutting teeth on large, coarse-pitch gears. All teeth are cut simultaneously by reciprocating blank through cutting head and infeeding form-cutting tools. Handles gears with face widths up to 4½ in.; 5-in. stroke; shapes gears with dias ranging from 5 to 10 in.

GEAR-DEBURRING MACHINE — *Modern Industrial Engineering Co, 14230 Birwood Ave, Detroit 38.* Model BME-24 handles spur and helical gears, straight and involute external splines, from ⅝ to 6½-in. pitch dia. Two stations can be tooled to perform: identical operations at both stations; successive steps on the same gear; or to deburr and chamfer parts that are totally different.





DEBURRING MACHINE—*Modern Industrial Engrg Co, 14230 Birwood Ave, Detroit 38.* Universal internal Burr-Master deburrs and chamfers internal splines, or straight-sided or involute form helical or spur gears from ⅝ to 3½-in., having from 9 to 42 teeth.

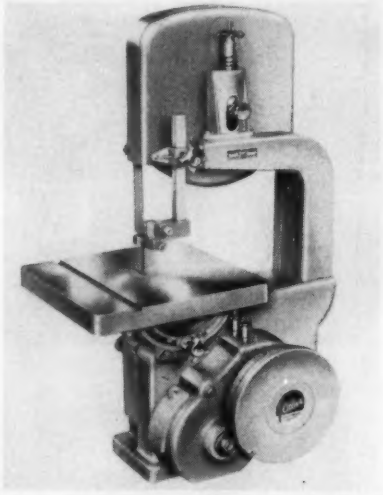
American Machinist 1955 PRODUCTION PREVIEW

CUTOFF AND FILING

summarized from descriptions published during 1954

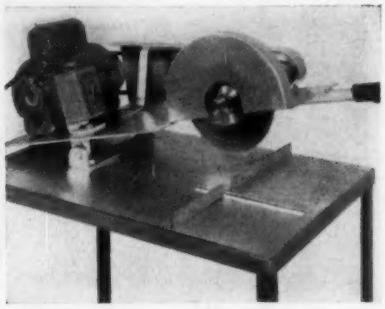
CUTOFF MACHINE — *DeWalt, Inc, Lancaster, Pa.* Can be fitted with abrasive wheel for solid, bar, or tubing stock or with sawblade for non-ferrous metals and thin tubes. Mechanism is air-actuated to complete cut once starting lever is depressed.

BAND MACHINES—*The DoAll Co, 255 N Laurel Ave, Des Plaines, Ill.* Line of semi-automatic band machines using the Demon HSS saw band expands the potentialities of the use of the band machine for such operations as slotting, slitting, shaping, and notching. The blade is offered in two tooth styles: "Demon Precision" and "Demon Buttress." Hardness of the blade permits greater band tool velocity than with high-carbon-steel blades.

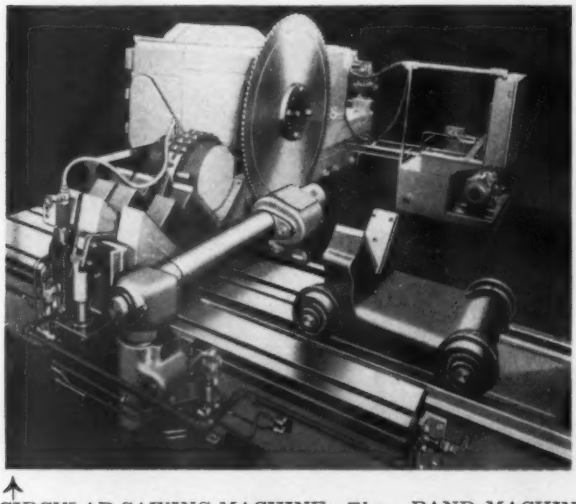


BANDSAW—*Atlas Press Co, N Pitcher St, Kalamazoo, Mich.* Takes work 6¼ in. high above 14x14-in. table; cuts to center of 24-in. circle. Two speeds—100 and 250 fpm.

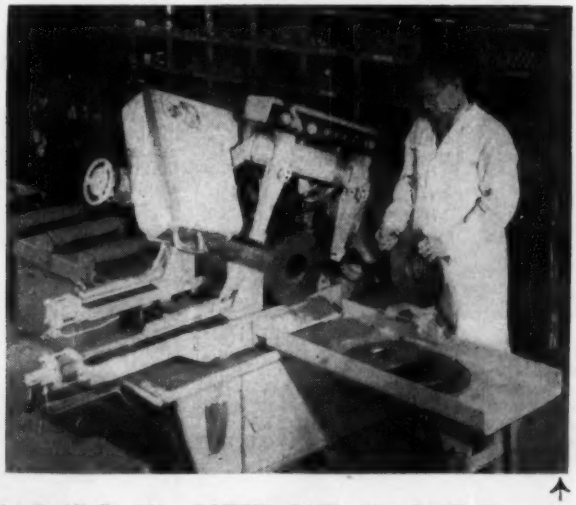
DEEP-THROAT BANDSAW — *Bett-Marr Manufacturing Co, Hopkins, Minn.* Three-wheel bandsaw with 24-in. throat is for cutting stacked sheet metal. Speed control makes adaptable for cutting iron, steel, forgings, aluminum, bronze, brass, copper, stainless. The 61-in.-high saw permits center cutting on sheets up to 48 in. Speeds from 100 to 600 fpm.



PORTABLE CUTOFF MACHINE — *Aluminum Enterprises, Inc, 17815 Cliff Ave, Detroit 12.* 85-lb machine accommodates blades to 10 in. Fences provide straight or miter cut. Will cut 5-in. steel pipe or 7-in. aluminum extrusion. Price, $131.



CIRCULAR SAWING MACHINE—*The Motch & Merryweather Machinery Co, Penton Bldg, Cleveland 13.* No. 5 Model cuts 43-in.-dia ferrous or non-ferrous stock. Saw head is powered by a 30-hp, 900-rpm motor; face of spindle is 20 in. in dia.

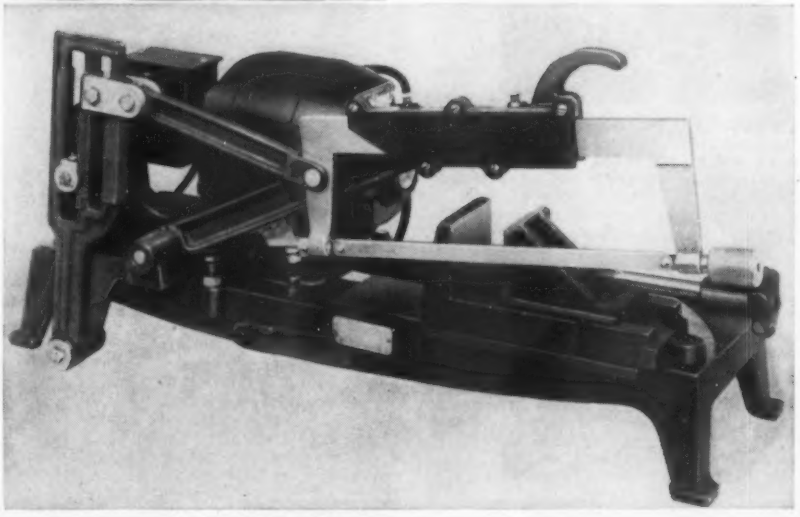


BAND MACHINE—*The DoAll Co, 254 N Laurel Ave, Des Plaines, Ill.* 16-in. machines with 12-in.-thickness capacity is powered for tough, straight, or curved metal-sawing operations. Band filing, metal polishing, and carbide finishing.

POWER SAW—*The DoAll Company, 254 N Laurel Ave, Des Plaines, Ill.* Horizontal power cutoff saw incorporates adjustments and hydraulic controls for feed pressure, band tensioning, and infinitely variable speed changes.

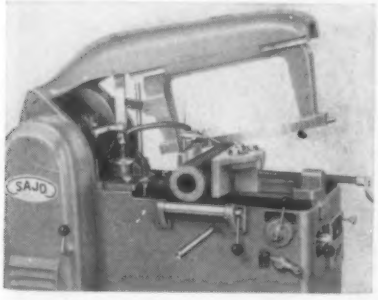
METAL-SAWING MACHINE — *Peerless Machine Co, 1600 Junction Ave, Racine, Wis.* 6x6-in. capacity; powered by ¾-hp electric motor; two-speed V-belt drive is controlled by step sheave.

BANDSAW—*Wells Mfg Corp, 505 Roosevelt Rd, Three Rivers, Mich.* Head on Model 49A may be swung horizontal or vertical for use as cutoff saw or upright bandsaw. Capacity is 3½- x 6-in. rectangular stock, or 3½-in. OD rounds.



PORTABLE HACKSAW—*La-Roy Industries, Inc, 810 S Fowler St, Howell, Mich.* Patented mechanical motion provides cutting action on forward stroke, automatic lift and release of pressure on return. Quick-action vise holds stock to 2¾ in.; adjustable to cut 15, 30, or 45° angles.

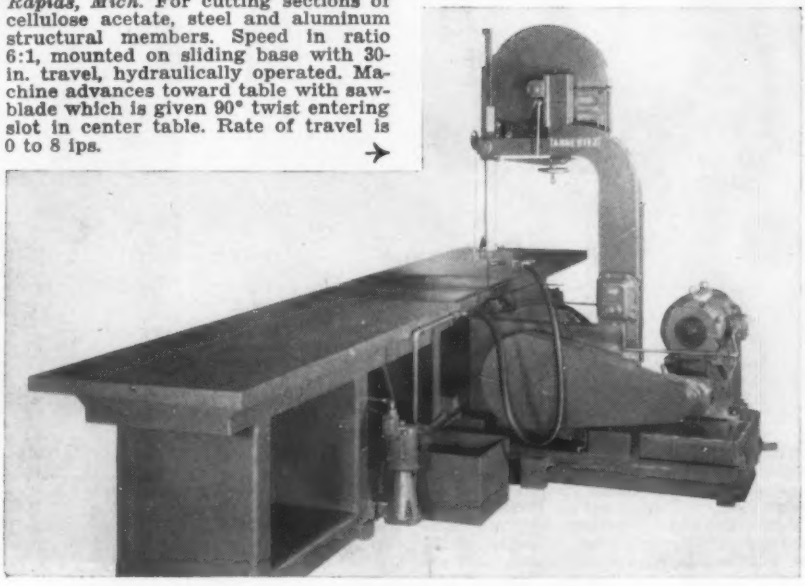
PANEL SAW—*Hendrick Manufacturing Corp, Room 308, Marblehead, Mass.* Cuts metal, plastic, and plywood up to 10 ft in length, producing bevel or miter cuts from 0 to 90°. Cutting rates run to 75 fpm and carriage returns to starting position in 5 sec.

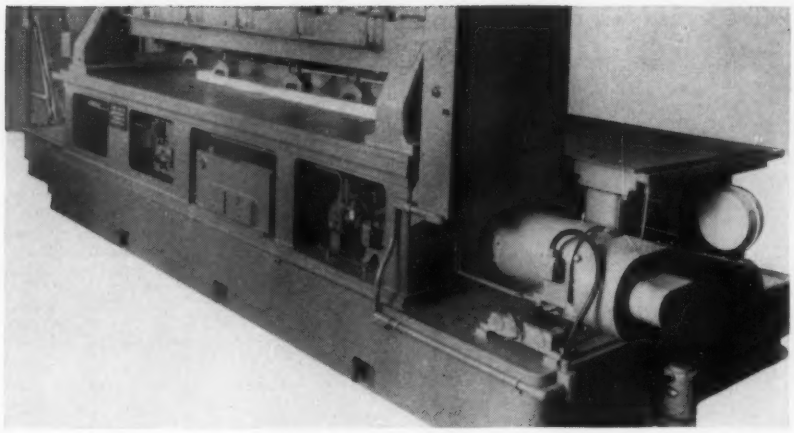


HACKSAW—*Austin Industrial Corp, 76 Mamaroneck Ave, White Plains, NY.* SAJO Model RC-250 hydraulic hacksaw has capacity of 10-in.-square stock, and has feed stop fitted for 20-in. length. Cutting pressure is controlled by fingertip lever.

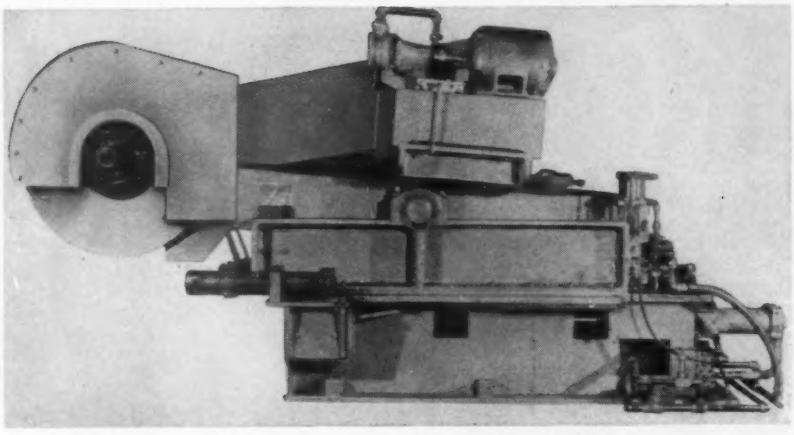
CUTTING MACHINES—*Campbell Machine Div, American Chain & Cable Co, Inc, Bridgeport, Conn.* Model 28; stationary and portable machine 62 in. high. Cuts solid steel to 4x4 in., angles and channels to 8 in., tubes and pipes to 4 in. OD.

BANDSAW—*Tannewitz Works, Grand Rapids, Mich.* For cutting sections of cellulose acetate, steel and aluminum structural members. Speed in ratio 6:1, mounted on sliding base with 30-in. travel, hydraulically operated. Machine advances toward table with sawblade which is given 90° twist entering slot in center table. Rate of travel is 0 to 8 ips.





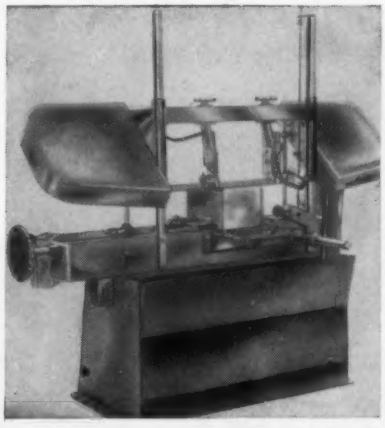
HIGH-SPEED PLATE SAW — *The Motch & Merryweather Machinery Co, Penton Bldg, Cleveland 13, Ohio.* Handles aluminum plates up to 4 in. thick x 12 ft long. Coolant sump, chip compartment, and chip conveyor are built into the base. The hydraulic tank and pump with motor are in centrally located recess. The surface of the plate is equipped with free rollers in small cylinders actuated hydraulically to raise the stock from the surface of the table. Adjustable fence squares up the stock.



ABRASIVE SAW — *Wallace Supplies Mfg Co, Dept AMN, 1200 Diversey Parkway, Chicago 14.* Cuts tubular sections to 4½ in. OD or equivalent relieved shapes and solids to 3 in. dia. Powered by 7½-hp motor with interchangeable V-belt pulleys to drive 16-in. cutting wheel.

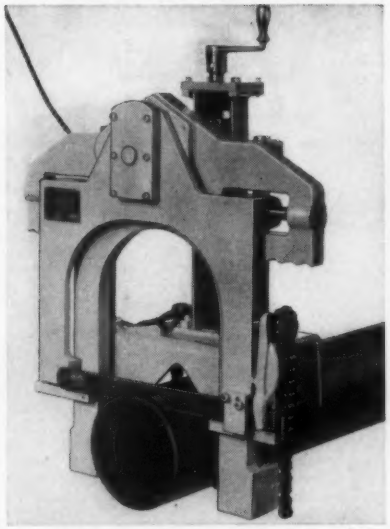
AUTOMATIC SAW — *York-Gillespie Mfg Co, 39th St & Allegheny Valley Railroad, Pittsburgh 1, Pa.* 48-in. combination cross-cut and drop saw, with either vertical or horizontal blade feed, can cut two 7x7-in. billets side by side.

VARIABLE-SPEED BANDSAW—*The Tannewitz Works, Grand Rapids, Mich.* Hydraulically actuated table for sizes too large to be fed by hand. 36-in. bandsaw has 36x37-in. table and hydraulic feed from 0 to 6 ips. Rapid table traverse is provided to point of contact between work and saw.

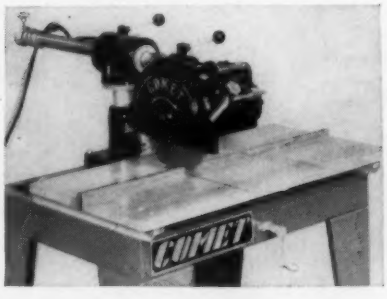


BANDSAWS — *W F Wells & Sons, Three Rivers, Mich.* Model W (9x18 in.) and Model F (14x18 in.) provide speeds from 50 to 290 fpm. Metering valve permits choice of blade speed and pressure.

BANDSAW — *Universal Vise & Tool Co, Parma, Mich.* Cutoff as well as contour saw; feed for cutoff work is by gravity track feeding blade into work; for contour work, blade is in fixed position.

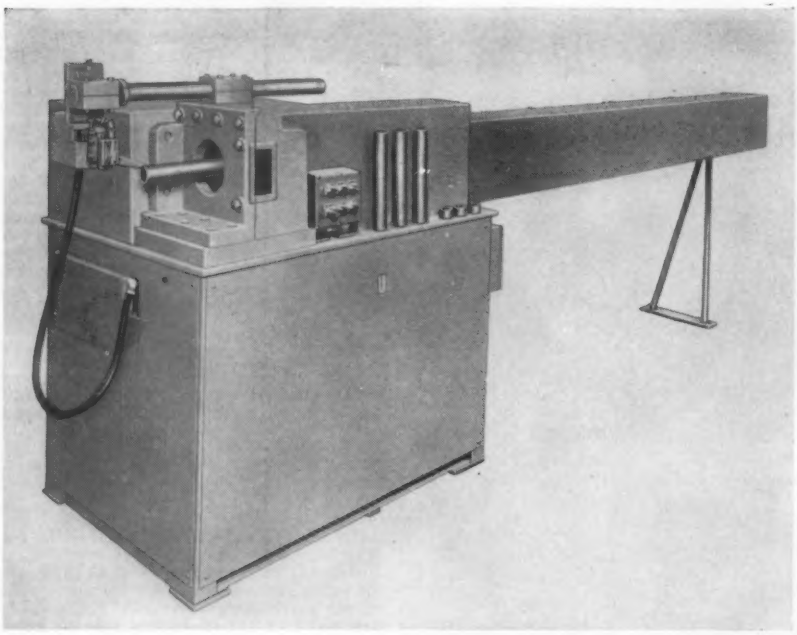


PIPE SAW—*E H Wachs Co, 1255 N Dayton St, Chicago 22, Ill.* Cast iron, steel, pipe, bar stock, and beams from 2 to 8 in. in dia cut by saw weighing 120 lb, operating in space 25 in. wide.



ABRASIVE MACHINE—*Campbell Machine Div, American Chain & Cable Co, Inc, Bridgeport 2, Conn.* Model 28 Sever-All has capacity for angles to 8 in., and tubes and pipes to 4-in. OD. Self-centering workholders clamp on both sides of cut.

RADIAL-ARM SAW — *Consolidated Machinery & Supply Co, 2033 Santa Fe Ave, Los Angeles 21.* Comet has starting switch close to pull-handle; each turn raises or lowers it 1/16 in. from front. Redesigned saw guard, with anti-kick-back dogs, is adjustable.

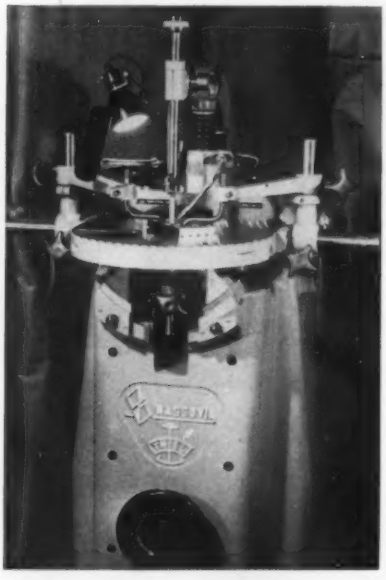


AUTOMATIC TUBE-CUTTER — *The Steel Products Engineering Co, Springfield, Ohio.* Cuts tubes of diameter from ⅜ to 2 in.; special adapters for larger sizes are available. Lengths from ¾ in. on up. Unit is loaded from the front by sliding tube onto cutting arbor. Operation is entirely automatic.

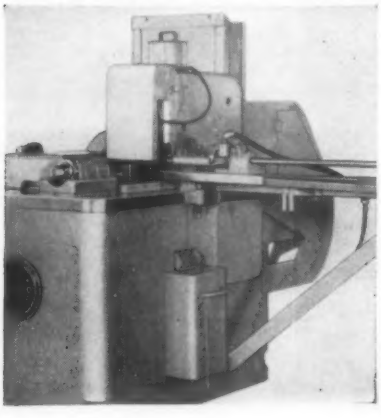
TUBE STRAIGHTENER AND CUT-OFF—*Walter P Hill, Inc, 22183 Telegraph Rd, Detroit 19.* Hand-fed straightening rolls and hydraulically fed cutoff wheel will handle tubing from coils up to 24 in. in dia. Tube can vary from ¼ in. to 1 in. in dia, and cut-off length is variable up to 6 ft. Either saw or abrasive cutoff wheel may be used.

PORTABLE SHEAR—*Manco Mfg Co, Bradley, Ill.* Model H-90 guillotine shear has 90-ton capacity and weighs 950 lb. Capacity is up to 1½-in. round stock, operation is electric-hydraulic; unit is on wheels.

POWER FEED—*Stone Machinery Co, 701 Fayette St, Manlius, NY.* Semi-automatic; for cutting heads of chop-stroke-design Stone saws; operates by air with one simple control.

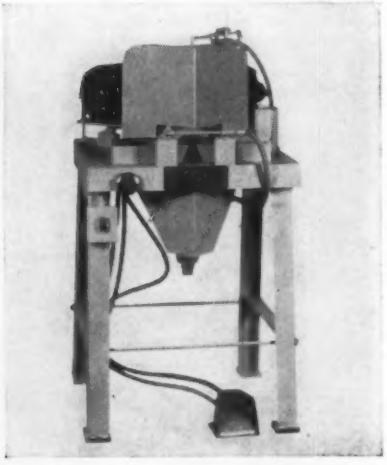


FILING, SAWING MACHINE — *Hirschmann Co, Inc, 30 Park Ave, Manhasset, NY.* Nassovia-Thiel Type 14, has 75 to 340 spm. Length of stroke from 0 to 5 in.



WHEELS AND TIRES—*Carter Products Co, Dept W, 30 Ionia Ave, SW, Grand Rapids 4, Mich.* Jiffy tires are now standard equipment on Rigid Wheels in sizes for any bandsaw.

TUBE CUTTER—*Grieder Industries, Inc, 309 Richardson Bldg, Toledo 4.* Two blades cut 2-in. tubing at 6000 cuts per hr, accurate to 0.002 in. Clamping dies, air clutch and brake.



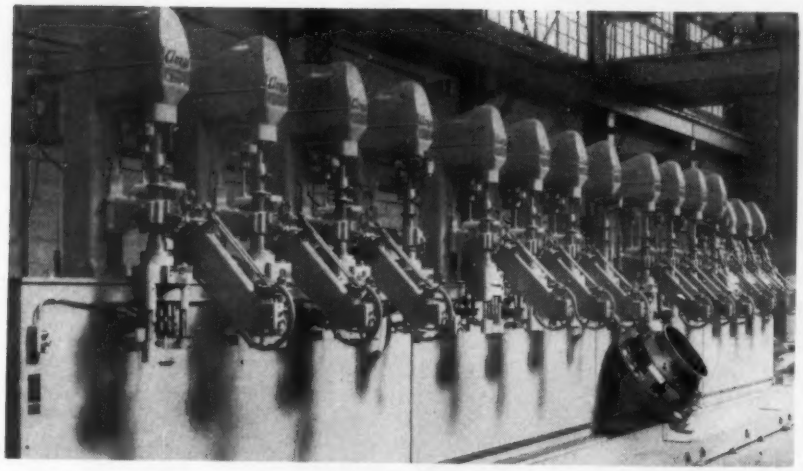
TWO-HEAD MITERING MACHINE—*Stone Machinery Co, 701 Fayette St, Manlius, NY.* Model DM-10 cuts two complete 45° miters in one operation; cuts extrusions in aluminum, brass, copper. Automatic cutting cycle, by hand or foot-operated controls.

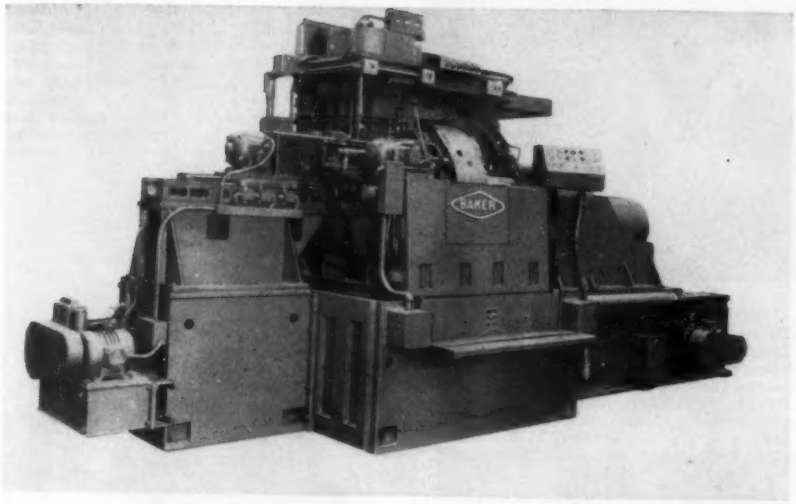
CUTOFF WHEELS — *Raybestos-Manhattan, Inc, Manhattan Rubber Div, Passaic, NJ.* Rubber and resinoid bond cutoff wheels, 18 and 20-in. dia. Chop-stroke unit has 15-hp motor.

American Machinist 1955 PRODUCTION PREVIEW

SPECIAL MACHINES

summarized from descriptions published during 1954





JET DIFFUSER DRILL — *Avey Drilling Machine Co, Cincinnati 1, Ohio.* 16 spindles drill, countersink, ream and tap more than 150 holes of a jet engine diffuser. A sliding fixture carries the part to each station in turn and permits rotation and positive indexing at each.

BUSHINGS INSERTED—*The Avey Drilling Machine Co, Cincinnati 1.* Steel bushings are inserted into transmission case, reamed, and two small nameplate holes are drilled. 360 parts per hour. Operating units are interlocked through JIC electrical control panel.

AUTOMATIC TRANSMISSION PARTS—*Buhr Machine Tool Co, Ann Arbor, Mich.* Performs 18 operations at 124 pieces per hr. Unit is 5-way automatic indexing type miller with 6-station 2-place fixture.

FLYWHEEL HOUSINGS—*Buhr Machine Tool Co, Ann Arbor, Mich.* Capable of handling two different models by exchanging tools. The machine is a five-way automatic six-station fixture arranged with hydraulic clamping and mounted on a 60-in.-dia automatic index table. Production rate is 100 pieces per hour and 42 operations are performed on each housing.

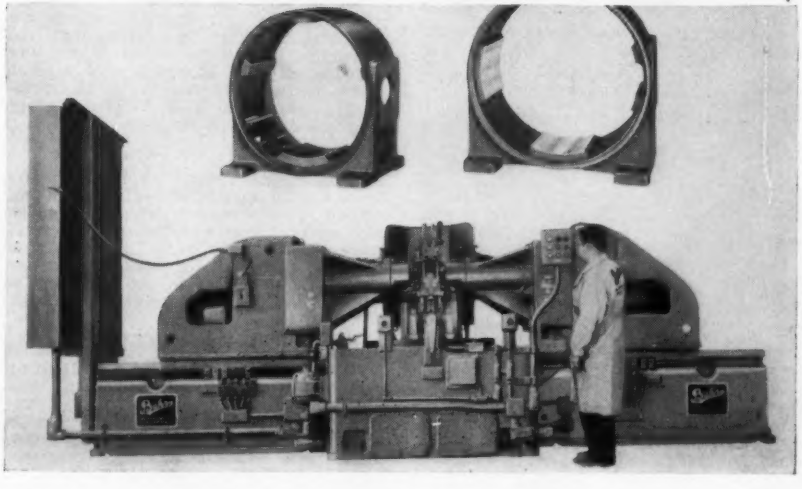
ENGINE CRANKSHAFTS—*Buhr Machine Tool Co, Ann Arbor, Mich.* 26 operations at 96 crankshafts per hour. 26-spindle combination drilling and tapping head, 10-station holding fixture, and precision automatic index table. Hydraulic and electrical installations conform to JIC standards.

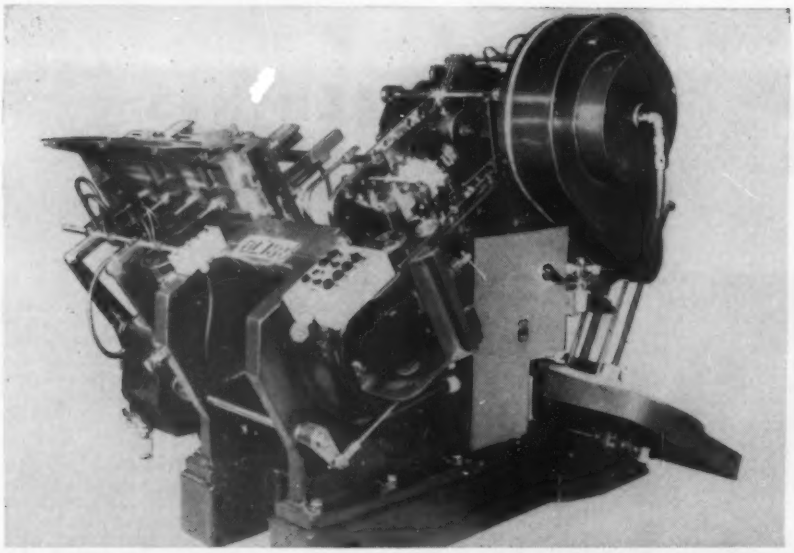
STATOR FRAMES — *Buhr Machine Tool Co, Ann Arbor, Mich.* 3-way boring, facing, and tapping machine processes eight frames at rate of 60 pieces an hour. Automatically indexes 180°; two opposing spindles finish-bore stator hole and face rabbet bores, simultaneously tapping four conduit box holes with tapping unit mounted in rear.

DIESEL PISTONS—*Baker Bros Inc, Toledo, Ohio.* Produced at 41 per hr. on hydraulic-feed machine with 4-station trunnion and auxiliary single spindle unit. Available feeding pressure is 23,500 lb.; multiple head unit has direct drive from main motor, provision for pick-off speed-change gears.

AUTOMOTIVE PARTS — *Buhr Machine Tool Co, Ann Arbor, Mich.* Automatic indexing 5-station machine loads four parts at a time for drilling and reaming, using independent lead-nut plate. Production is 670 per hr.

AUTOMOTIVE FLANGES—*Buhr Machine Tool Co, Ann Arbor, Mich.* Two flanges at a time are drilled, bored, and chamfered at rate of 329 per hr. Machine features automatic index table, hydraulic clamping, and new air balance system to eliminate counterweights. System operates at 50 psi, has safety device to guard against air failure.

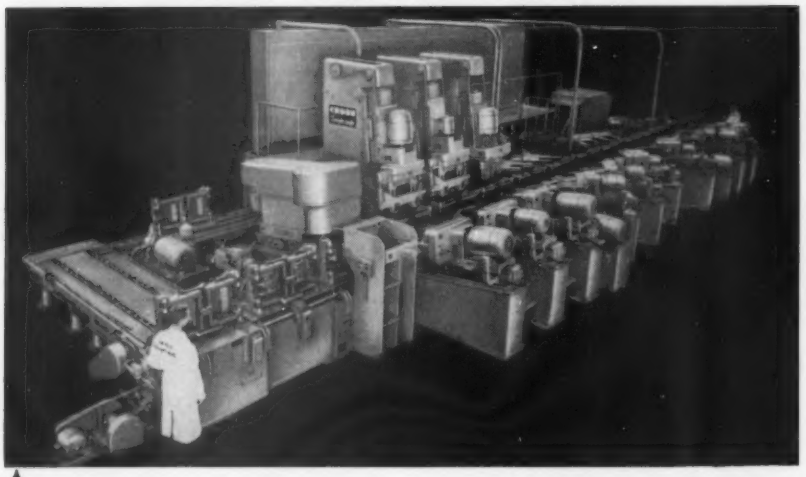




AUTOMATIC STRIP-FEED PRESS—*E W Bliss Co, Hastings, Mich.* Produces sanitary can ends and closures, is reported to operate satisfactorily at speeds above 300 spm. Features include: combination disk friction clutch and brake, electrically controlled; balanced crankshaft, 4 to 6-in. dia at bearings and crankpin.

FLANGE-ROLLING — *Calstate Engineering Service, 8517 Santa Monica Blvd, Los Angeles 46, Calif.* Capacity for rolling 0.12-in.-thick aluminum and adjustments provide for rolling a C flange ¼ to 2 in. long and ½ to 3½ in.

BROACHING FIXTURE — *Colonial Broach Co, Box 37, Harper Sta, Detroit 13.* Two pull-down broaches are adapted to single, standard machine with one clamping and locating fixture to broach two parts at once. Designed for RD-6-42 machine, fixture handles 300 pieces per hr at speed of 30 fpm.



BEARING CAPS — *Colonial Broach Co, Box 37, Harper Station, Detroit 13.* Locating faces on automotive bearing caps are broached at 480 per hour with semi-automatic unit, using two adjustable stationary insert broaches. Model HB1, 4-ton, with 12-in. stroke at 30 fpm.

CAMSHAFT SPROCKETS — *Colonial Broach Co, Box 37, Harper Station, Detroit 13.* Automated 3-station machine includes drill unit, broaching machine, and stamping unit. Hydraulically actuated rotating index table contains four equally spaced special chucks that receive and locate parts from loading mechanism. Table is indexed every 45°. Rate is 200 parts per hour.

INTAKE MANIFOLDS — *The Cross Company, Detroit 7, Mich.* Transfermatic performs 100 operations with a production rate of 206 parts per hour. The machine has fourteen stations, twelve for working, one for loading, and one for unloading.

AUTOMATIC TRANSMISSION HOUSING—*The Cross Co, Detroit 7, Mich.* Transfer-Matic machine with 29 stations processes 100 parts per hr. Operations include drilling, chamfering, end milling, counterboring and reaming and tapping. Machine performs 90° indexing of part in station 14 for drilling sides and top in subsequent stations.

SECTIONIZED AUTOMATION—*The Cross Co, Detroit, Mich.* 350-ft Transfer-matic performs 55 operations on V-8 cylinder blocks, producing 100 per hour. Machine is divided into five sections, any one of which may be shut down while others remain in automatic operation. Seven Toolometers program operation of tools.

TRUCK-AXLE CARRIERS — *The Cross Co, Detroit 7.* Milled, drilled, and tapped on machine with capacity for both spiral-bevel and hypoid carriers; processes 53 parts per hour with nine stations, one each for loading and unloading and seven for machining. A total of 97 operations are performed.

HACKSAW BLADES — *Fuller Brush Co, Machine Div, Hartford 2, Conn.* Machine cleans heat-treated blades or similar types of stock before painting. Operator loads unit, steam-cleaned blades emerge onto conveyor.

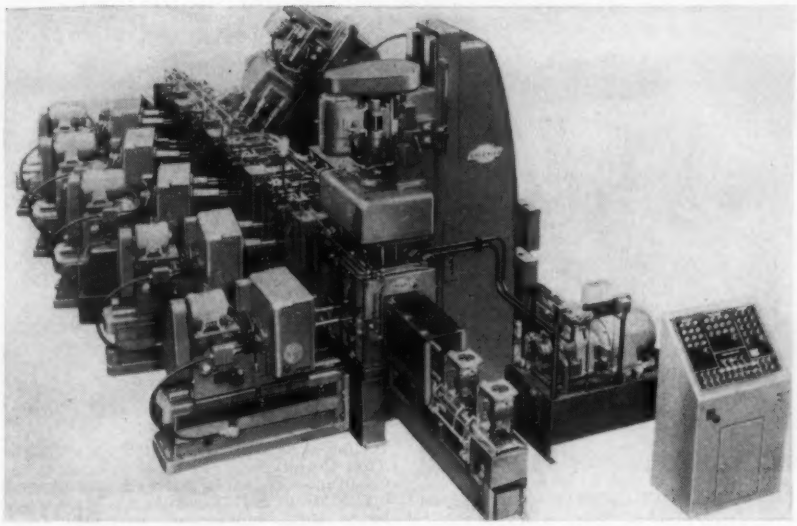
TRANSMISSION SHAFT SUPPORTS —*The Cross Co, Detroit 7.* Machine bores, drills, reams, and taps, turns rear face, counterbores, and chamfers. Production is 128 castings per hr. Index table has six stations and is fluid-motor driven.

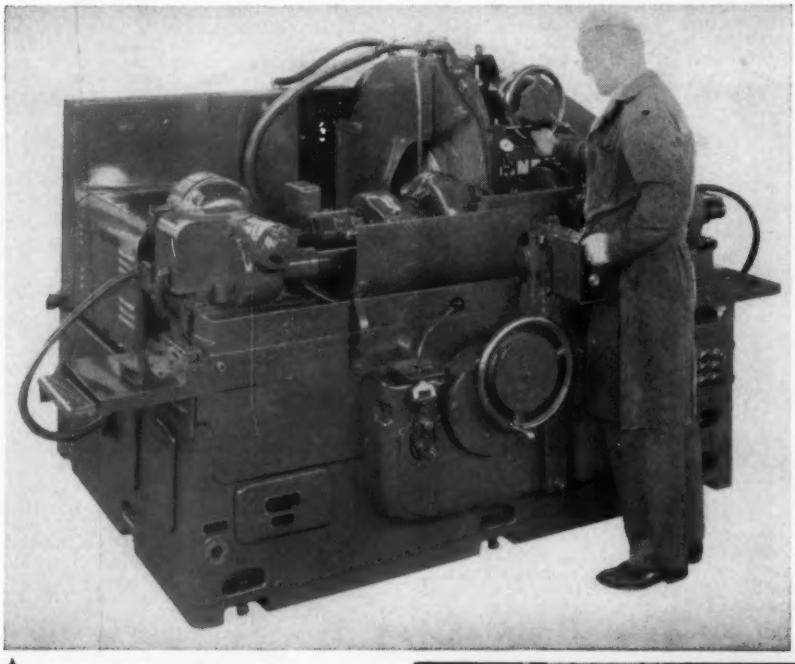
SIDE GEARS—*Colonial Broach Co, PO Box 37, Harper Sta, Detroit 13, Mich.* Automated setup broaches splines in 2 models of differential sidegear, at total rate of 800 pcs per hr. Chain-conveyor carries gears on 144 individual fixtures. 18-sec cycle.

TRANSMISSION CASES — *Greenlee Bros & Co, Rockford, Ill.* Machined in 4-unit production line. Combines facilities of 247 tools to complete 265 operations in 29.5 seconds, averaging 122 cases per hour.

TRANSFER MACHINE — *Ferguson Machine & Tool Co, Roller Gear Div, Box 191, St Louis 21, Mo.* Trans-O-Mator is standard, multi-station transfer machine, complete with drive, motor controls, and work carriers. Production up to 20,000 pieces per hr is obtainable.

ROCKER ARMS—*Heald Machine Co, Worcester 6, Mass.* Model 221 Bore-Matic with four individual fixtures and loading mechanisms. Air hammer arrangement seats parts in fixture. After boring tools are automatically retracted, table runs out at rapid traverse. Boring heads are running at 1750 rpm with boring lead of 0.004 in. Net production is 600 parts per hour.





WATER-PUMP BODIES — *Michigan Drill Head Co, Detroit 34.* Drills, chamfers, spot-faces and taps on machine built around standard Hydra-20 assembly. Index-table rotates fixture; taps have individual leadscrews. 120 pcs per hr.

FOUR-BARREL CARBURETORS—*Morris Machine Tool Co, Cincinnati.* 23 operations at rate of 375 pcs per hr. Model 67S. Standard base index table, straight and angular drillheads. Automatic lubrication.

AUTOMOTIVE PARTS—*Govro-Nelson Co, 1933 Antoinette, Detroit 8.* Machine drills and reams opposed holes in line. Incorporates 6-station Geneva-type indexing dial electrically interlocked with 4 Govro-Nelson KH automatic drilling units.

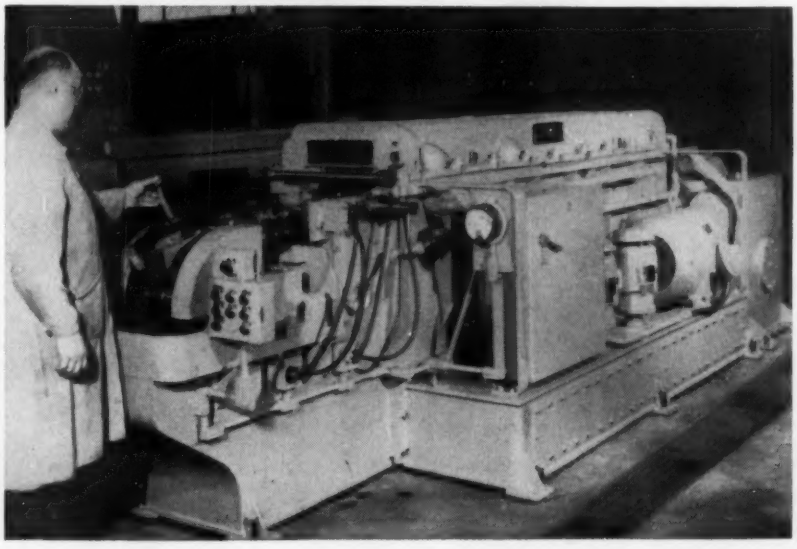
DOOR HANDLES—*Govro-Nelson Co, 1933 Antoinette, Detroit 8.* Machine drills RH and LH parts simultaneously. Incorporates four automatic drilling units, tap-drills two ¼-20 holes in two automobile door handles in one operation at rate of 600 parts per hour.

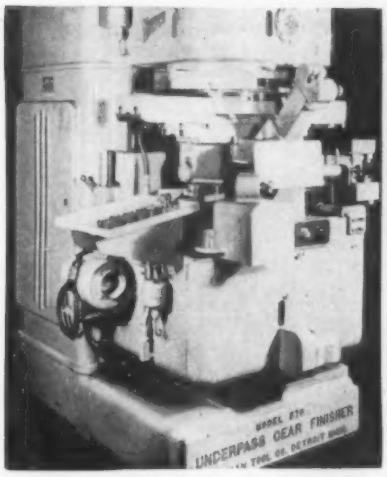
SMALL CRANKSHAFTS—*Landis Tool Co, Waynesboro, Penna.* Grinds pins on 10-in. type H machine, lengths from 16 to 34 in. Hydraulic clamping fixtures. Hand and hydraulic feed to wheelhead, which carries 36-in. wheel.

COMPRESSOR FINS—*Kane & Roach, Inc, Syracuse 4, NY.* No. 00X cold-forming machine with 2LS coiler and cut-off produces 300 5½-turn coils per hr from 1⅜x0.044-in. stock.

DRILL CUTTER — *Homestrand, Inc, Larchmont, NY.* Bergstrom automatic machine VM1R hogs out flutes in twist drills of 3/64- to ¼-in. dia; larger model covers sizes to ½ in. Drill taper can be controlled by cam.

AUTOMOTIVE CONNECTING RODS —*The Lapointe Machine Tool Co, Hudson, Mass.* Continuous broach produces 1800 parts per hr on sides, face, and half-round of automotive connecting rod. Stock removal ⅛ in. Built with stroke of 120 in., has 30-hp motor, 120-in. stroke. Chip-conveyor attachment removes chips.



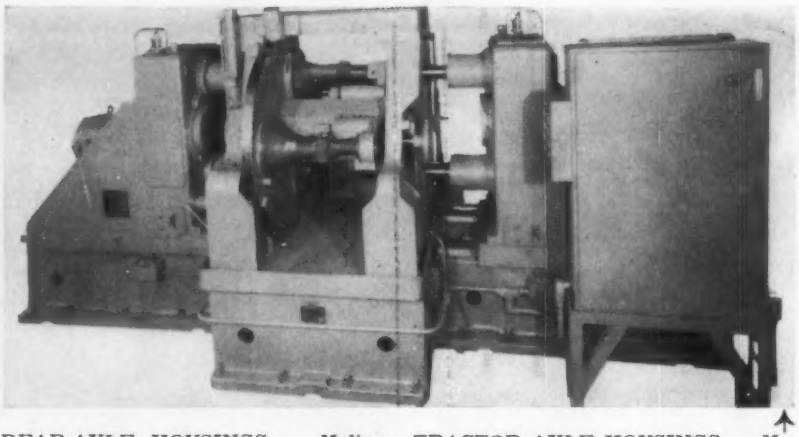


TWO-GEAR CLUSTER — *Michigan Tool Co, 7171 E McNichols Rd, Detroit, Mich.* Shaved on Model 870 underpass gear finisher at production rate of 240 gears per hour. All operations, except loading, are automatically controlled. During shaving operations, 0.005 in. of stock is removed.

MICA UNDERCUTTER — *Martindale Electric Co, Cleveland 7, Ohio.* Model HV-3 bench-design mica undercutter takes both horizontal and vertical commutators up to 6½-in.-dia. Unit has 20 in. between centers.

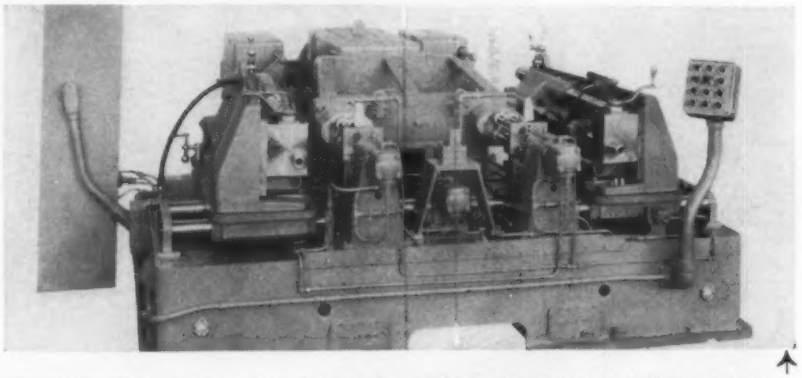
AUTOMOTIVE VALVE TAPPETS— *Motch & Merryweather Machinery Co, Penton Bldg, Cleveland 13.* Automatically grinds spherical radius on heads of automotive valve tappets. Four grinding spindles remove 0.015 in. of stock. Tappets are hopper fed two at a time. Production is 4000 pieces per hr, surface finish is 10 mu-in.

TANK HULLS — *Motch & Merryweather Machinery Co, Cleveland 13.* Milling machine for manufacturing M-48 hulls. Head is single-speed with added speeds through change gears; 75 hp is introduced directly into head by multiple V-belt and bull gear.



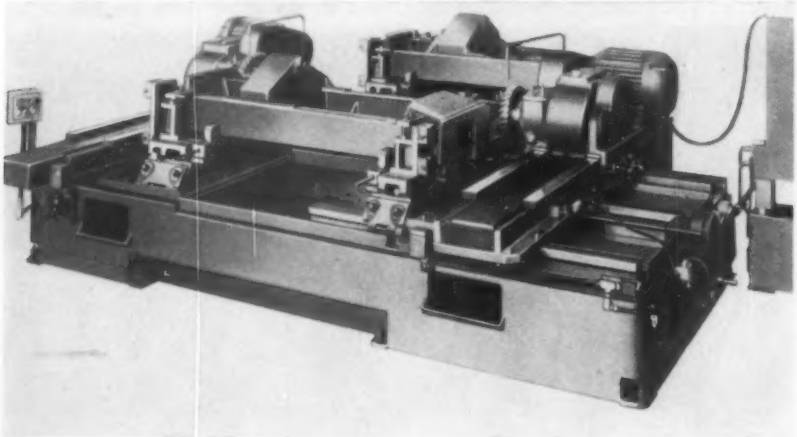
REAR-AXLE HOUSINGS — *Moline Tool Co, Moline, Ill.* Drilled, spotfaced, counterbored, taper reamed, and tapped on Moline MR132 special, two-way, three unit, horizontal, hydraulic-feed machine. A power-indexing, trunnion-type fixture with one loading station and four work stations holds the work. Production rate is 80 parts per hour.

TRACTOR AXLE HOUSINGS — *Moline Tool Co, Moline, Ill.* Horizontal hydraulic-feed machine semi-finish- and finish-bores right- and left-hand rear axle housings for tractors. Two spindles are mounted on each spindle head. Production rate is 80 parts per hour.



CONNECTING RODS—*The Motch & Merryweather Machinery Co, West Third & Lakeside Ave, Cleveland.* Machine takes one-piece forgings and saw-cuts cap from shank of rod. It consists of RH and LH sawing heads carrying HSS triple-chip, circular blades fed by hydraulic cylinders simultaneously from each side.

TRUCK I-BEAM FRONT AXLES — *Modern Tool Works, Ltd, 69 Montcalm Ave, Toronto 10, Ontario, Canada.* Drilled at rate of 32 per hour. Accommodates various truck-axle designs and features automatic compensation for variations between like forgings. Spindle speed control is obtained by pick-off change gears.



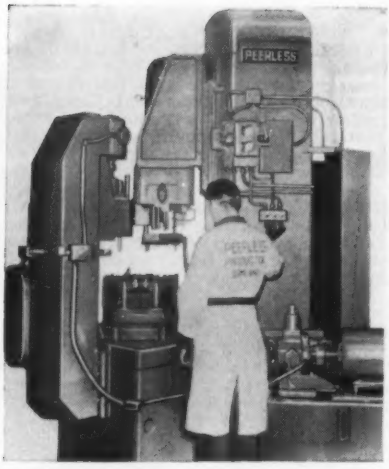
TRACTOR FRAMES—*The Motch & Merryweather Co, Cleveland.* Mills ends of frames with 30-hp 1800-rpm motors. Traveling heads replace moving table and fixtures. Saddle on ways adjustable from 6 to 11 ft for length of work.

CRANKPIN JOURNALS—*Metco Inc, 733 Egleston Ave, Kalamazoo, Mich.* Machine regrinds any crankpin journal on a diesel engine crankshaft. Part is ground within crankcase without having to remove crankshaft.

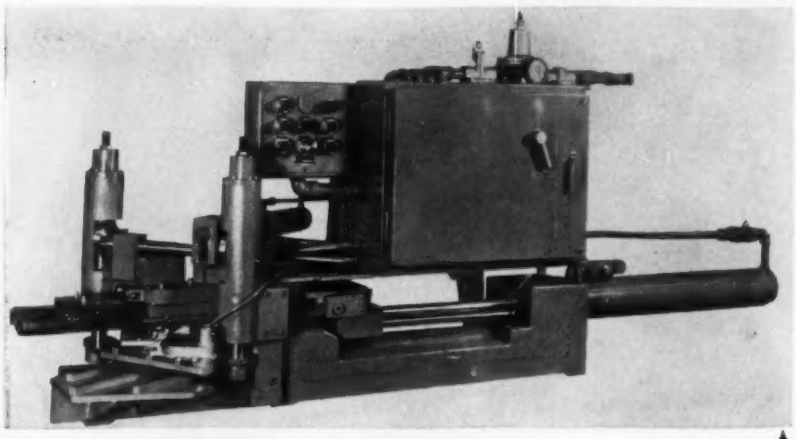
SHELL FORGINGS—*The Motch & Merryweather Machinery Co, Penton Bldg, Cleveland 13, Ohio.* Sawing machine has two heads, one RH and one LH, arranged for automatic, simultaneous cropping of both ends of an 8-in. shell forging. Heads have nine spindle speeds, multiple-disk clutch, and self-contained lubrication system.

TRACTOR LINK BUSHINGS — *The National Automatic Tool Co, Richmond, Ind.* Cores are drilled and reamed on automatic multiple-spindle vertical indexing machine which handles six different size bushings. Incorporates five-position indexing table, two vertical-spindle heads with 20 chucks, and automatic load mechanism.

DIESEL ENGINE BLOCKS—*National Automatic Tool Co, Richmond, Ind.* Boreface machine employs two heads, speeds production by finish-boring cam and crank holes, and boring and cross-feed facing flywheel case simultaneously. Completes 4.3 parts per hour.

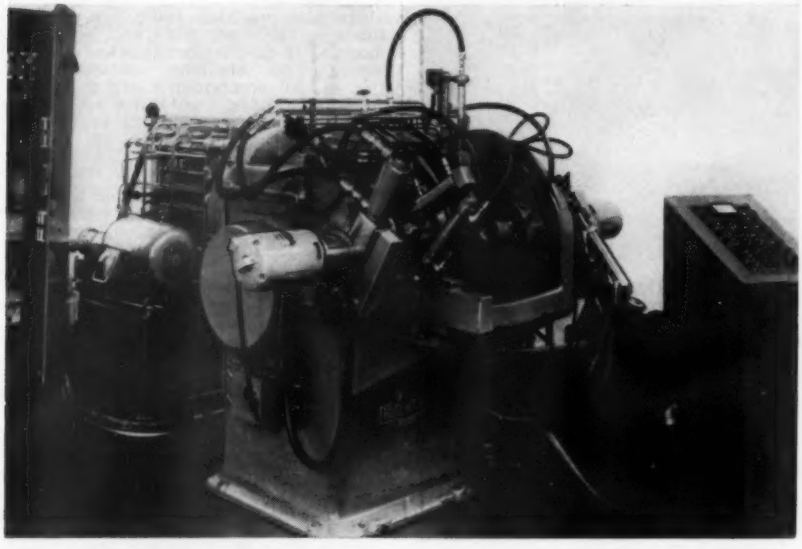


TRANSFER PLATES—*Peerless Production Co, Detroit, Mich.* Machine drills, chamfers, and taps 160 per hour for automatic transmissions. Vertical machine, two-way, has 14-in. way, hydraulic-feed unit, and welded-steel tapping column with 24-in. 4-station automatic power index.



DIFFERENTIAL CARRIERS—*Peerless Production Co, 19451 Glendale, Detroit 23, Mich.* Transfer machine takes raw cast carriers, roughs and finishes them, and then completes rough and finished boring and facing operations as well as drilling and tapping. The eight stations process 40 carriers per hour.

HORIZONTAL BROACHING FIXTURE—*National Broach & Machine Co, 5600 St Jean Ave, Detroit 13, Mich.* Air-powered; simultaneously broaches two non-parallel slots in die-cast aluminum washing machine gear case cover. Simultaneous broaching is achieved by design in which each broach is attached to individual angular-mounted shafts on puller head through universal-joint-type yokes.



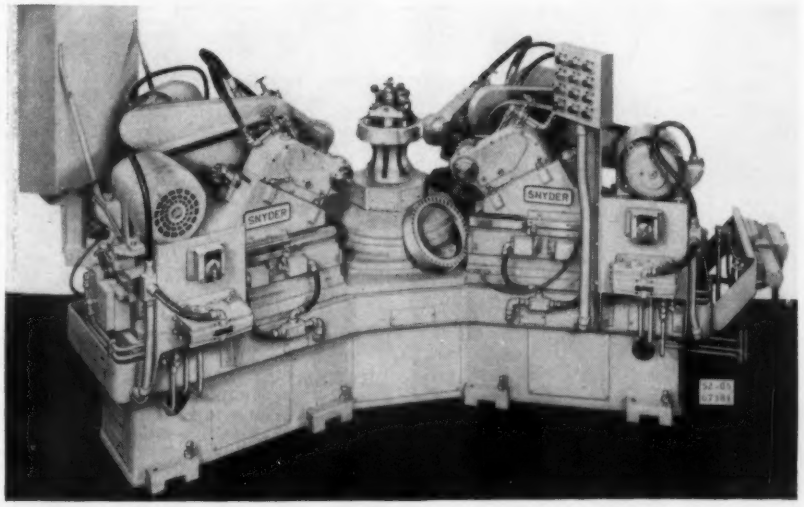
PUMP HOUSINGS—*Peerless Production Co, 19451 Glendale, Detroit 23.* Processed by machine with hydraulically actuated cross-slide and power-operated mechanical take-off device. Positioning device permits boring of close-center-distance holes in single setup. 30 assemblies per hour.

AIRCRAFT PARTS—*Snyder Tool and Engineering Co, 3400 E Lafayette, Detroit 7, Mich.* Drills a total of 140 holes, and reams and chamfers as required in cast aluminum alloy 32 in. in diameter and 12 in. deep. The machine features a chain-index mechanism driven by a hydraulic motor and moving the fixture through the four work stations.

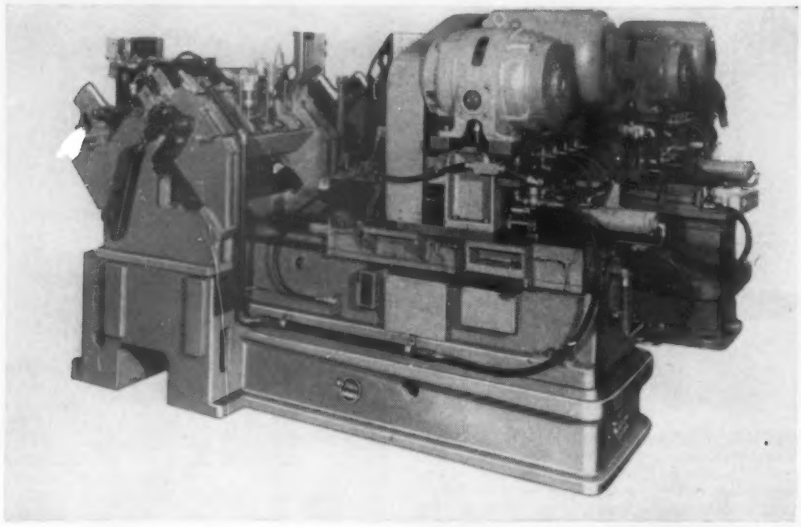
PROPELLER HUBS—*Standard Machine & Tool Co, Windsor, Ont.* Holewise two-spindle grinder grinds slots of special form to close tolerance in aircraft propeller hubs. Cycle is automatic for roughing and finishing, dressing, indexing, and size control. Spindle speed is electronically controlled.

RR CAR WHEEL HUBS—*Snyder Tool and Engineering Co, 3400 E Lafayette, Detroit 7, Mich.* Automatic vertical index boring and facing machine has three major components: a vertical spindle column for facing operation; a boring head; an indexing turntable with three workholding positions, 120° part. Four carbide tips, two round for roughing and two square for finishing.

JET SHROUD SPACERS—*Snyder Tool & Engrg Co, Detroit 7.* Automatic machine drills and reams outer shroud-spacer rims with spindle speeds from 640 to 2240 rpm, feeds from 1.75 to 12 ipm, and with 8-in. stroke.



CAST ALUMINUM ALLOY — *Snyder Tool & Engineering Co, 3400 E Lafayette, Detroit 7, Mich.* 4-way machine mills eight slots in a circular part loaded on fixture which oscillates through a 90° arc. Tools are HSS with feed rate of 32 ipm and speed of 350 sfm. Feed is hydraulically controlled.



CYLINDER HEADS—*W F and John Barnes Co, Rockford, Ill.* Machine bores cylinder heads for OHV engines. Multi-blade tools form seats, modified gun drill bores valve guide holes. Production is 120 V-8 cylinder heads per hr.

NUTSETTER—*Reed Roller Bit Co, Cleco Div, Houston, Texas.* Ten-spindle unit sets bolts on V-8 engine cylinder block. Blocks are fed in on conveyor at 2000 per hour.

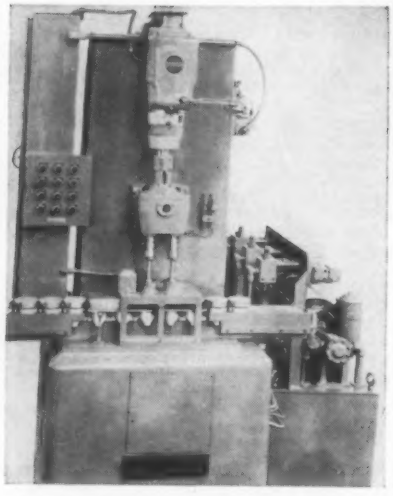
DIFFUSER CASES—*Snyder Tool & Engrg Co, 3400 E Lafayette, Detroit 7.* Three special boring and facing units machine aircraft diffuser cases at one per hr. Feed rates are hydraulically controlled, spindle speeds varied by adjustable sheaves.

ARTILLERY TUBES—*Walsh, Inc, 646 N Michigan Ave, Chicago 11.* Lacquers primer body, punches and installs diaphragms, inspects and ejects finished parts. Hopper-fed, 20 to 50 pieces per minute. Takes work from 2 to 24 in.

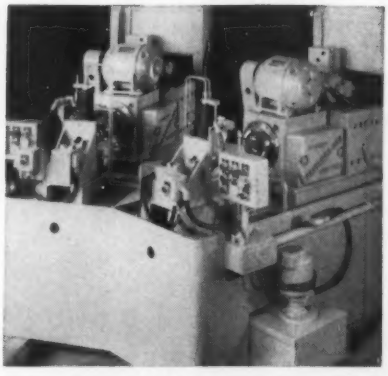
VALVE PLUNGERS—*Turner Bros, Inc, 2625 Hilton Rd, Ferndale, Mich.* Automatic machine drills, reams, and deburrs 1400 pc per hr. Work is clamped in diaphragm chucks, indexed through 12 stations, automatically ejected. All components are standard, including base, columns, Hautau-Turndex index table, drill units, and chucks.

BICYCLE RIMS—*The Taylor-Winfield Corp, Warren, Ohio.* Seam-welded on three welders built into 40-ft production line. Flat strip, 0.028-in. thick is fed at rate of 35 fpm, formed to shape with edges folded together, and resistance seam-welded.

ENGINE BLOCKS — *Sheffield Corp, Dayton 1, Ohio.* Produced 2 per min on automative cylinder bore gaging and classifying machine. 6 air spindles are motorized for rapid travel into and out of block.

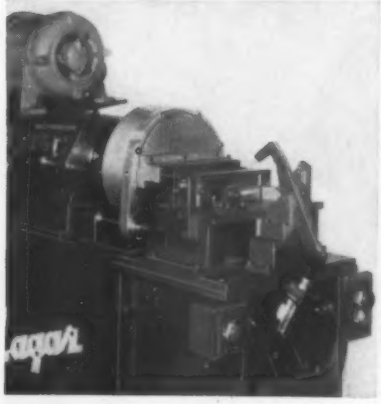


PISTON-MILLING MACHINE — *Turner Bros, Inc, 2625 Hilton Rd, Ferndale, Mich.* Produces 1400 pieces per hour. Hydraulic mechanism takes pistons from automation system and transfers them two at a time into position under milling spindles.

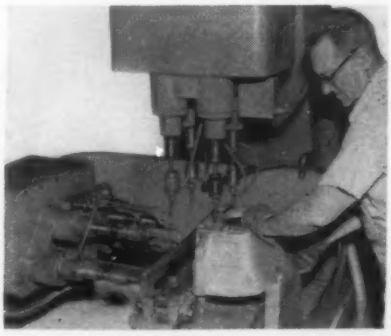


TRANSMISSION SHAFTS—*The Sheffield Corp, Dayton 1, Ohio.* Threaded with ⅞-16 U2A thread 11/32 in. long at 400 pphr. Machine incorporates two Precision-Pak units with automatic cycling.

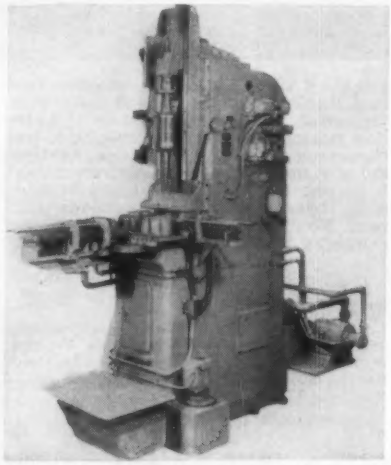
THREADING LATHE — *S & S Machinery Co, 140—53rd St, Brooklyn 32, NY.* Thread-O-Matic for capacities to 18 in. in length and 6-in. dia. Cuts internal and external threads, left- and right-hand taper and multi-start. Speeds to 2,000 rpm and rate of cutting more than 100 per min.



GAS BURNERS—*Zagar Tool, Inc, 2400 Lakeland Blvd, Cleveland 23.* 37-spindle gearless drillhead with hydraulic feed. Two passes drill 74 holes at rate of 70 parts per hour, with automatic cycle. Air-actuated fixture.



TRANSMISSION CASES — *Scully-Jones & Co, 1901 S Rockwell St, Chicago 8.* Machine taps four 5/16-18 and four 7/16-14 class 2 holes in diecast aluminum cases. Two-way unit has adjustable torque releasing driver. Spring-loaded centering plug absorbs shock when bottoming in blind holes.



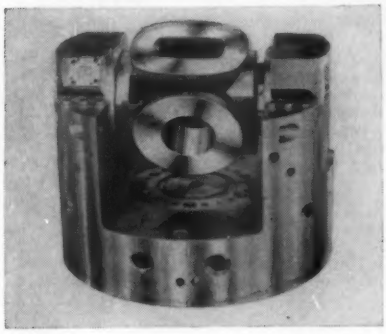
LAMINATED STATORS — *American Broach & Machine Co, Div Sundstrand Machine Tool Co, Ann Arbor, Mich.* Automatic, vertical, hydraulic, 3-way machine broaches ID of motor stators at 200 per hr. Designed for conveyor line operation.

American Machinist

1955 PRODUCTION PREVIEW

TOOLS AND ACCESSORIES

summarized from descriptions published during 1954

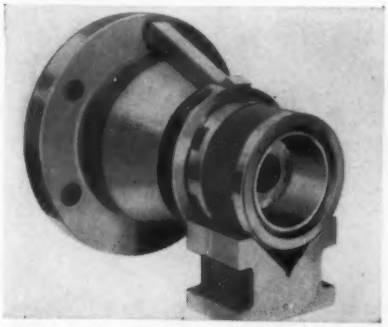


INDEXING CHUCKS — *Cushman Chuck Co, Hartford, Conn.* Two-jaw power or scroll chucks for holding pieces having opposing and angular surfaces in specific relation to one another.

PINCH-TYPE CHUCK—*The Cushman Chuck Co, Hartford, Conn.* Can be mounted on face plates, milling machine, or jig boring machine tables, and because of two-piece jaw construction may be used with soft blank top jaws machined as required.

SEGMENTAL PLATE CHUCK — *Whiton Machine Co, New London, Conn.* Jaw slots are formed in separate segmental plates mounted on chuck body. Plates are hardened and ground, have long service life. Body may be ductile iron, steel, or aluminum. Universal and independent models available.

LOCKING CHUCK—*Logansport Machine Co, Logansport, Ind.* PRO (power release only) chuck remains locked in closed position until it is positively opened by the operator. Neither centrifugal force nor power failure will cause release of work as chuck is revolving on the machine spindle. Body of chuck is slotted radially.

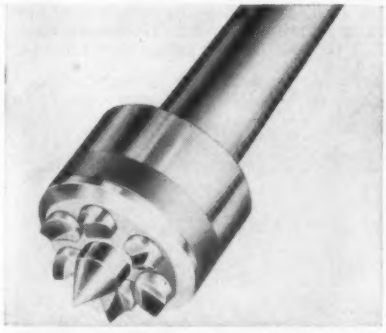


CHUCKING FIXTURE—*Scully-Jones & Co, 1901 S Rockwell St, Chicago.* Hobbing fixture; flange-type produced in 13 sizes with chucking diameters from 0.500 to 4.0000 in. with maximum torque ratings from 37 to 2460 ft-lb.

COLLET CHUCK—*Lynair, Inc, Jackson, Mich.* Actuated by heavy-duty air cylinder through gear train. Once collet is closed it will not release, even though air-pressure failure may occur. Capacity ranges from 1/16 through 3¾ in.

POWER CHUCK—*S-P Corp, 12415 Euclid Ave, Cleveland 6, O.* Compensating chuck holds rough forgings. Standard and serrated models; two, three jaws; 8-, 10-, 12-in. sizes.

GRIPPING PADS—*Haynes Stellite Co, Div Union Carbide and Carbon Corp, Kokomo, Ind.* Haynes Stellite 98M2 for use in automatic lathe chucks. Resistance to shock and impact.



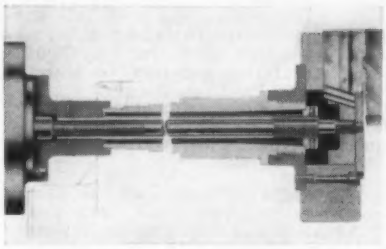
DRIVING CENTER — *Ze-Hawk Machine Specialties, 3716-20 W Montrose Ave, Chicago 18.* Eliminates driving dog. Capacities from ½ in. upward; standard Morse tapers are Nos. 2 to 6.

BALL-BEARING CENTERS — *Whitfield Mfg Co, 400 Oakland Ave, Washington Courthouse, Ohio.* Twin-row ball bearings in MAC multi-action revolving centers have hardened races and spindles that provide 3-point contact.

LIVE CENTER—*Rockford Engineered Products Co, 2324—23rd Ave, Rockford, Ill.* Has 6 adapters ranging from point to 6¼-in.-dia ball. Assembly may be locked for changing, regrinding, or use as dead center.

DRIVING CENTER—*Mera Machine & Mfg Co, Dept 1, 221 Spring St, Elizabeth, NJ.* Work can be removed or rechucked while machine is running, job can be finished in one setup. When work has been gripped, center is automatically locked. Eliminates use of dog and face plate in turning and grinding.

LIVE CENTER—*The Melin Tool Co, 3375 W 140th St, Cleveland 11, Ohio.* Ring backs up against face of quill, transferring rigidity of quill to head of center. Ring reduces spring in body of center at ratio of four to one.



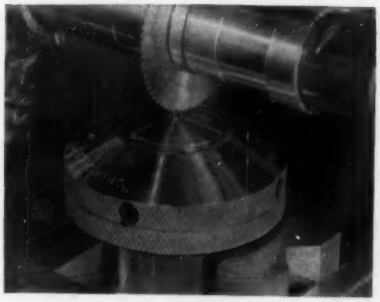
POWER CHUCK UNIT—*The Skinner Chuck Co, Edgewood Ave, New Britain, Conn.* Skinner Junior can be adapted to small lathes with 1 to 1⅝-in. hole through spindle. The 8-in. 3-jaw self-centering chuck has gripping capacity from ¼ to 6 in.; its ¼-in. jaw travel exceeds capacity of any collet.

POWER CHUCK FIXTURE—*Skinner Chuck Co, New Britain, Conn.* Non-rotating, air-operated, self-centering; 8, 10, or 12-in. dia, with two or three jaws; operated with Skinner hand valve, solenoid, or a 4-way foot valve. Max air pressure 100 lb.

CHUCK JAW BLANKS—*Jergens Tool Specialty Co, 712 E 163rd St, Cleveland.* 19 sizes fit 273 master chucks. For chucks having American Standard master jaws.

AIR CHUCK — *Buck Tool Co, 2015 Schippers Lane, Kalamazoo, Mich.* 12-in. chuck maintains precision within 0.001 in.; it can be machined on toolroom equipment. Permits using hardened top jaws for long wear.

12-JAW CHUCK—*Horton Chuck Div, E Horton & Son Co, Windsor Locks, Conn.* Pinch-design chuck, 42-in. dia, is said to be the first produced for the machining of large stress relieved shrouds and rings in jet engines.



COLLET CHUCK—*Hancock Mfg Co, Santa Clara, Calif.* Cannot dislocate work; collet is not drawn in while closing. Holds soft threaded and thin-walled cylindrical parts.

TOOLS and ACCESSORIES—workholders

LIVE CENTER—*Nirol Mfg Co, US Highway 22, North Plainfield, NJ.* Two needle bearings and one ball-thrust bearing maintain rotation accurately within 0.0002 in. Pressure spring compensates for work expansion and contraction, avoids resetting tailstock, and eliminates cold welds. Overhang is reduced to minimum.

BENCH CENTER—*Transit Coil Corp, 107 Grand St, New York, NY.* Type YBC-1 measures 9x5⅞x1⅛ in. Base is ground on all sides.

LIVE CENTER—*Ideal Industries, Inc, Sycamore, Ill.* Accurate to 0.0001 in., twin roller bearings, Morse tapers, for speeds to 2000 rpm, loads to 5200 lb.

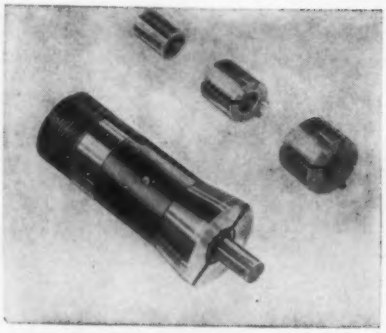
MANDRELS—*Le Count Tool Works, Inc, 390 Capitol Ave, Hartford, Conn.* Type S Super Count-Centric universal expanding mandrel with guaranteed accuracy and concentricity within 0.0002 in. Line includes 11 tools for arbors from ⅜ to 7 in.

AIR VISE—*Van Products Co, 3736 W 12th St, Erie, Pa.* Model 1000-6-in. stroke, combination air vise for conventional holding with 6-in. jaw faces, plus removable pipe jaws located in the lower portion.

HYDRAULIC VISE—*American Tooling Corp, 60 E 42nd St, New York 17, NY.* Hilma-Hydrovise combines elements of mechanical vise with hydraulic power transmission. Jaws close mechanically until clamped object is encounted; then clutch is activated and additional force to 8,750 lb is applied hydraulically. Price is $285.

INSTANT-ACTION VISE — *Heinrich Tools, Inc, Racine, Wis.* Grip-Master vises permit clamping compressible materials normally requiring slow-action screw vises. New PA series, incorporating pumping action locking mechanism, is available in four models with 3-, 4-, 6-, and 8-in.-wide jaws.

VISE—*The Columbian Vise & Mfg Co, 9021 Bessemer St, Cleveland 4, Ohio.* Operates from and rotates around standard base mounted in any desired position. Jaws are 2½ in. wide and 4¼ in. deep and max opening is 5 in.



COLLET ARBOR—*The Medelton Co, 335 E 142nd St, Bronx 54, NY.* Expanding Hole-True for holding work parts internally. Set consists of master, ⅜-in.-dia, and 3 adapter bushings to hold work with bores of ½, ¾, and 1 in.

COLLET SLEEVE ATTACHMENTS—*L-W Chuck Co, 25 S St Clair St, Toledo 4, Ohio.* For use with L-W Chuck's dividing heads; one for the 11-in. models BP and AU heads; takes up to a ¾-in. round standard 2 L collet; another, for the 6½-in. model SD head, takes up to a ⅝-in. round 4NS collet.

INTERNAL COLLETS — *Velocity Engrg, Div Morris & Batchelor, Inc, Glendale 3, Calif.* Ross Master is accurate to 0.001 TIR, grips firmly without scoring bore. Body diameters are 0.750 to 1.250 in. Lengths are 1.250 in.

DRILLPRESS VISE—*Chicago Tool & Engrg Co, 8383 S Chicago Ave, Chicago 17.* Palmgren No. 300 has 3-in.-wide jaws, with 3-in. opening and 1¾-in. depth; removable steel jaw plates; heavy Acme thread adjusting screw. May be turned on either side, end, or upside down for special operations.

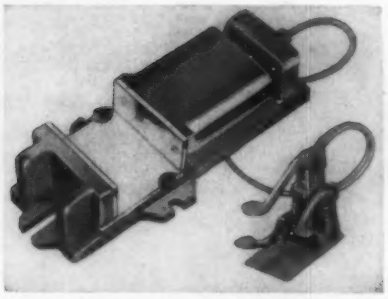
POWER VISES—*Wilton Tool Mfg Co, 925-941 Wrightwood Ave, Chicago 14, Ill.* Vise screw and handle preset jaw opening. Power unit vise, has stroke from 0 to ¾ in. Max jaw opening varies from 3 to 9 in.

VISE — *Evanson Equipment Co, 33 Warren St, Newark 2, NJ.* AVA vise locks part in two seconds. The 6- and 12-in. vise costs $8.95, the 30-in. size $11.95. Two lever springs give slight squeeze to 300-lb pressure.

TOOLMAKERS' VISES—*Air Transport Equipment, Inc, Box 25F, Mineola, NY.* Precision-ground on all surfaces to a non-cumulative square and parallel error of 0.0004 in. per inch. Dovetailed slide guarantees rigidity and parallelism and is adjustable for wear.

AUTOMATIC VISE—*Wilton Tool Mfg Co, 925-941 Wright-wood Ave, Chicago 14, Ill.* Air-powered hydraulic milling machine vise. Toe pressure on air valve places force of 9000 lb on jaws.

VISE PLATES — *Robbins Mfg Co, Hawthorne, Calif.* Aluminum vise-jaw plates protect finished parts; sizes for 2½- in. to 4-in. jaws.



MILLING VISE—*Studebaker Machine Co, 1221 S 9th Ave, Maywood, Ill.* Milvise holds with hydraulic pressure to 5 tons, obtained by foot-operator that moves rear jaw forward while another pedal applies pressure to max and third breaks pressure-jaw.

DRILLPRESS VISE—*Price & Rutzebeck, 22150 Meekland Ave, Hayward 85, Calif.* Dril-Lox employs drill torque to lock vise, and pieces in vise find their own center. Four sizes from 5¼ to 8½ in.

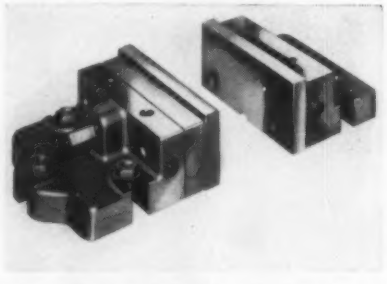
SPEED VISE—*Custanite Corp, Larchmont, NY.* Model B Prestoflex Varijaw holds irregularly shaped parts in floating jaws. Quick-acting screwless locking mechanism has adjustable locking pressure.

SOFT JAW—*A & A Co, 1133 South Ave, Plainfield, NJ.* Perma Jaw, for chucks, takes expendable inserts which can be tooled to fit any job. When insert is ground down, it can be replaced with new one.

SPEED VISE—*Cardinal Machine Co, 1819 Dana St, Glendale, Calif.* Patented screw thread permits full vise performance in fraction of usual time; half turn locks or unlocks vise. Can be used as drill jig by installing bushed jaw plate.

MILLING MACHINE VISE—*Chicago Tool & Engineering Co, 8383 South Chicago Ave, Chicago 17, Ill.* Palmgren No. 60B flanged vise with swivel base. 6-in.-width jaws open to 6 in.; jaw depth is 2 in.

MILLING VISE—*Universal Vise & Tool Co, Parma, Mich.* Two independent jaws mount in T-slots on table, are prevented from slipping by tie bar which engages teeth on bottom. Jaws are 2½ in. high, 8⅞ in. wide. Tie bar fits T-slots ½ in. wide or over.

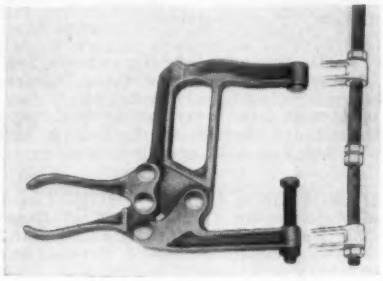


VISE—*Rockford Engineered Products Co, Rockford, Ill.* Special soft jaws hold shafts between centers for milling slots, flats, and keyways. Used independently, rigid base serves as useful angle block; adjustable clamp base can be used as separate clamping device.

workholders—TOOLS and ACCESSORIES

PNEUMATIC VISE—*Production Devices, Inc, Whitehall, NY.* Airlox S-7 vise for carbide milling operations has been equipped with a new system for handling chip problems. In addition to the chip plate and felt installation, grease gun can be applied to accessible fittings.

WORKHOLDING DEVICE—*Universal Vise & Tool Co, Parma, Mich.* Mill table vise has jaw opening limited by length of T-slotted machine table. Its two individual jaws are held in position by rack tie bar engaging teeth in bottom of each jaw.



CLAMPING DEVICE—*Lapeer Mfg Co, Detroit 2.* Double-spindle pliers and C-clamps have two opposed spindles independently adjustable to obtain clamping opening anywhere within throat gap. Clamping forces of 1200 and 1800 lb are available.

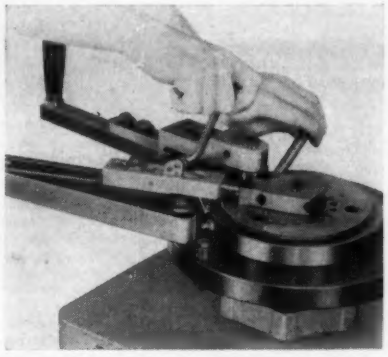
CLAMPS—*Lapeer Mfg Co, Lapeer, Mich.* Model V-100 has vertical handle and horizontal mounting surface; Model S-100 is for side mounting. Both have clamping force of 100 lb with spindle located at end of toggle bar.

TOGGLE CLAMPS—*Lapeer Mfg Co, Lapeer, Mich.* Knu-Vise Model V-400 clamp is non-magnetic stainless; portable Knu-Vise pliers Model P-1200 is forged from non-magnetic K-Monel

SLIDING WORKHOLDER — *Horton Chuck, Div E Horton & Son Co, Windsor Locks, Conn.* Pinch-type unit for holding thin walled parts in position on chucks or face plates. Has pinching capacity up to 1½ in. in thickness; diameter capacity limited by size of chuck.

CLAMP COMPONENTS—*Siewek Tool Co, 2862 E Grand Blvd, Detroit 2, Mich.* Keys, spring plungers, spring stops, torque screws, and other items, all of alloy steel.

WORKHOLDER — *Lassy Tool Co, Plainville, Conn.* Interchangeable jaws and clamps hold one or more regular or irregular workpieces. Compensating clamps are positive acting, sealed, and without springs.

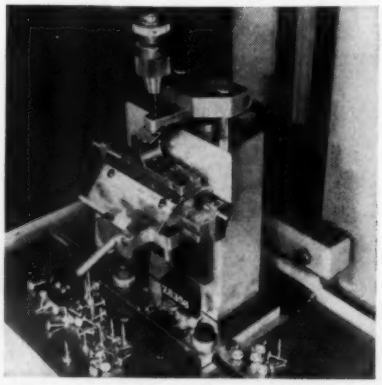


CLAMPING DEVICE—*O'Neil-Irwin Mfg Co, 512 Eighth Ave, Lake City, Minn.* Quik-Lok for forming tubing, angle, channel, and extrusions on No. 1 and 1A models of the Di-Acro Bender.

FIXTURE CLAMPS—*Harco Engineering, 12092 Woodbine Ave, Detroit 28, Mich.* Positive right-angle clamping by three-point rocker action. Contacting point of clamp bar is radiused.

TOGGLE CLAMP — *Erico Products, Inc, 2070 E 61st Place, Cleveland 3, Ohio.* Plunger-type, Model P-2 has 3000-lb horizontal clamping pressure and 2-in. stroke of the plunger.

STRAP CLAMPS—*Northwestern Tool & Engineering Co, 117 Hollier Ave, Dayton 3, Ohio.* Finish-machined and heat-treated strap clamps, plain and with stepped ends, to be used with step blocks.



AIR CLAMP UNITS—*Snow Mfg Co, 435 Eastern Ave, Bellwood, Ill.* Air-operated universal clamping fixtures are standard units adaptable to many machining operations by adding suitable positioning equipment.

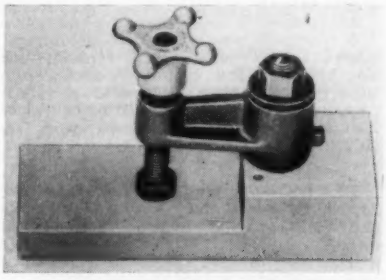
WORK CLAMPS — *Techno Products, Inc, 1908 E 66th St, Cleveland 3, Ohio.* Q-clamp is an integrated clamp and support which can be adjusted in height. Series of interchangeable components fit together to cover height from 0 to 49 in. above machine tool table. Made in light and heavy series to accommodate T-slot bolt diameters of ½, ⅝, ¾, ⅞, and 1 in.

ADJUSTABLE CLAMP — *Hi-Lo Mfg Co, 18525 Weaver Ave, Detroit 28.* T-bolt and clamp rest are serrated for rapid adjustment. Blocking and shimming, and necessity for obtaining correct length of bolt are eliminated.

CAM CLAMPS—*Special Engineering Service, Inc, 8161 Livernois Ave, Detroit 4, Mich.* Designed to maintain positive holding pressure and secure clamping action on varying stock thicknesses, found in castings and forgings. Suitable for many milling operations, as well as for usual applications. Available in four standard sizes.

PORTABLE CLAMP—*E & E Engineering Co, 15023 Harper Ave, Detroit 24.* Triple E is a toggle-action device designed to fit the grip. Two sizes: Model 400 with 1-in. jaw capacity and 1⅜-in. throat depth, and Model 405 with 1¾-in. jaw and 2¾-in. throat depth.

HINGED BAR CLAMPS—*Adjustable Clamp Co, N Ashland Ave, Chicago 22, Ill.* Mounted on any flat surface. Four designs with reach of 2 to 5 in. Opening of 6 to 30 in.

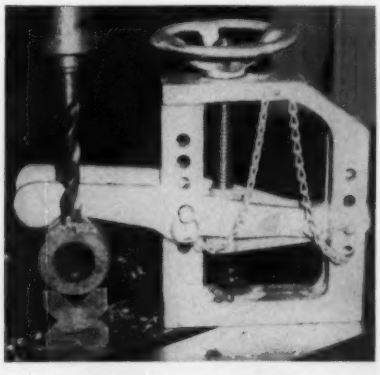


FIXTURE CLAMP—*Jergens Tool Specialty Co, Cleveland.* Reversible hold-down clamp with hand knob, three sizes.

AIR CLAMPS—*Lapeer Mfg Co, Lapeer, Mich.* Toggle action with ability to "go around corner" to do its clamping.

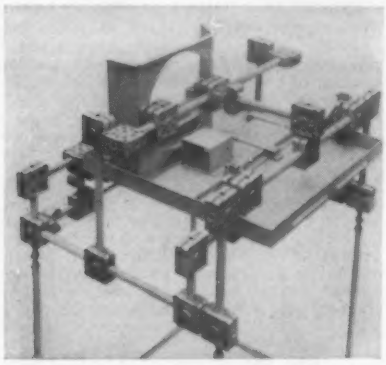
TOGGLE CLAMPS—*West Point Mfg Co, 26935 W 7 Mile Rd, Detroit 7, Mich.* Hardened steel bushings at wear points. Rated from 80 to 1600 lb.

HOLD-DOWN CLAMP—*Hunter Tool Co, 6608 S Gretna Ave, Whittier, Calif.* T-head is slipped up through cross slots in drillpress table; thumbscrew adjusts bar parallel.



HOLD-DOWN CLAMP—*Safety-Adjustable-Hold-Down Clamp Co, 600 Albany St, Brunswick, Ga.* Gives 8000-psi equalized pressure with compound leverage. Unit attaches to T-slot table, adjustable pins are set, work inserted, and leverage wheel turned.

TOOLS and ACCESSORIES—workholders



FIXTURE SYSTEM — *Wharton and Wilcocks of America, Inc, 17 Battery Pl, New York 4, NY.* Unitube; substitute for welded structures. Tubes and other elements of fixtures can be dismantled and re-used.

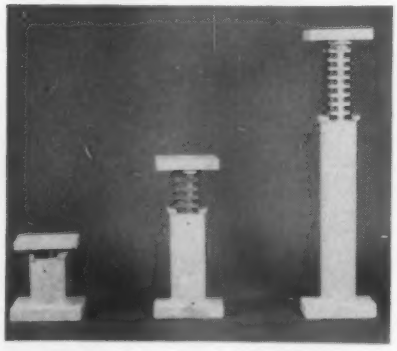
FLAT FEET—*Jergens Tool Specialty Co, 712 E 163rd St, Cleveland, Ohio.* Line provides thin, large-diameter rest pad for bottom of jig. Six sizes, ½ to 1¾ in. in diameter, and ⅛ to ⅜ in. thick.

V-BLOCKS—*Precision Tool Mfg Co, 1305 S Laramie Ave, Cicero, Ill.* Blocks are 4-5/16x5⅛x5¾ in., forged of chrome-moly alloy steel and treated to a hardness of 60 R_c. Parallelism of V's and slots are within 0.0003 in.

MODIFIED COMPONENTS—*Morton's Machine Works, 2421 Wolcott, Detroit 20, Mich.* Standard fixture clamps and components can be adapted to fit specific jobs. Six-inch handwheel can be used in place of hand knob for swivel screw assembly. CS-1 clamp strap is modified to include special phenolic fiber insert on clamping end of strap.

FIXTURE BODIES—*Smith Engineering & Tool Co, 191 Bay Ave, Glen Ridge, NJ.* Cast, made with ground parallel sides and base plate, and come in 7500 stock sizes.

MAGNETIC PARALLELS AND V-BLOCKS—*George Scherr Co, 200 Lafayette St, New York 12, NY.* May be used on all types of magnetic chucks, including permanent magnetic type. Universal set consists of two parallels, 1 x 1¾ x 3¾ in., and two V-blocks, 1¾ x 2⅜ x 1⅞ in.

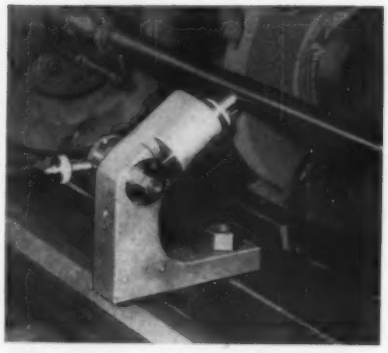


CLAMP POSTS—*Ingersoll Milling Machine Co, Rockford, Ill.* For use with hold-down clamps; produced in 4, 7, and 12-in. heights adjustable to 7, 12, and 22 in.

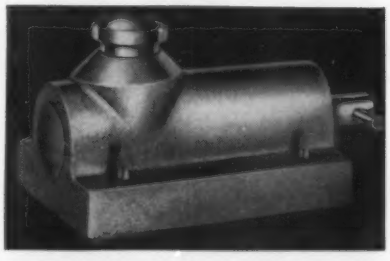
AIR C-CLAMP—*Burleign Co, Los Angeles.* Self-adjusting head throws plunger with 2-in. travel to close clamp with 6-in. opening, 3-in. throat. Chamber and valve are integral with clamp.

GRINDING & CHECKING FIXTURE —*DeSoto Tool Co, 2250 E Nine Mile Rd, Hazel Park, Mich.* Al-Maur unit for parts requiring small radii grinds angles from 0 to 180° and radii as small as 0.01 in. to tolerances as close as 0.0001 in.

GRINDING FIXTURE—*Pablo Industries, Inc, 6943 West Grand Ave, Chicago 35, Ill.* For circular form tools; requires no calculations to operate; adapts to any make of surface grinding machine.



WORK SUPPORTS—*Last Word Sales Co, Detroit, Mich.* For grinding operations; said to give stabilizing support from the rear and underneath. Used with grinders having 5 to 6-in. swing, 6 to 7½-in. center heights.

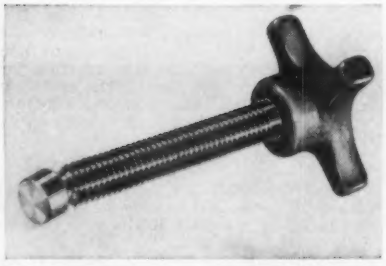


PLUNGER JACK — *Special Engrg Service, Inc, 8165 Livernois Ave, Detroit 4.* Overcomes vibration; supports forgings, castings, and other parts during operations. Two models—the 7-50 with ⅛-in. button travel, 4 13/16-in. over-all length; the 7-55 with 3/16-in. travel and 7½-in. length.

MILLING FIXTURES — *Walter W Field & Son, 41 Hayward St, Cambridge 42, Mass.* Alternative to special jigs and fixtures for jobs on miller, shaper, drillpress, and tapping machines. Units are easily attached to the machine and will hold round, hexagonal, octagonal, or square stock.

PRESSURE FOOT—*West Point Mfg Co, 26935 W 7 Mile Rd, Detroit 19.* One-piece, has diamond point rubber tip molded to full-length threaded 5/16-in. machine screw. Adaptable for use with Wespo toggle clamps.

SWIVEL SHOES—*West Point Mfg Co, 26935 W 7 Mile Rd, Detroit 19, Mich.* Swivel shoes and screws are available in 4 types and 63 sizes.



TOGGLE SHOE CLAMP—*Northwestern Tool & Engrg Co, Dayton 3, Ohio.* Retaining spring holds shoe in place, allows 10° adjustment.

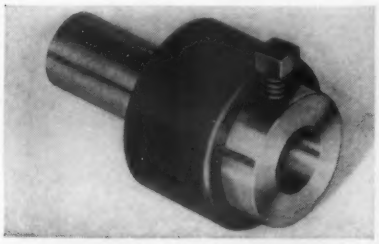
CYLINDER—*Beckett-Harcum Co, 1087 Wayne Rd, Wilmington, Ohio.* Square-rod clamping-fixture cylinder, is supplied with 1-in. bore, having ⅛-in. pipe thread air connection, in 1, 2, 3, and 4-in. strokes, with spring return.

REMOVABLE CLAMP SHOE—*Lance Manufacturing Co, 31144 West Eight Mile Road, Farmington, Mich.* Gulland Swiv-L will fit standard thread like ordinary nut. Swivel action will allow it to follow contour of work without marring surface. Thread sizes ranging from ¼-20 to ¾-10.

FIXTURE KEY—*Vlier Engineering, 4552 Beverly Blvd, Los Angeles 4, Calif.* Fits all standard mill table slots from 9/16 to 13/16 in. by 1/16 in. Each of five tongues on 5-way key held parallel and equidistant within ±0.0005 in. to shank dia.

FIXTURE KEY—*Standard Parts Co, 1000 Broadway, Bedford, Ohio.* Sure Lock keys fit into reamed holes in fixture bases, eliminate keyways; are instantly interchangeable to adapt fixtures to machines with different size T-slots.

toolholders—TOOLS and ACCESSORIES

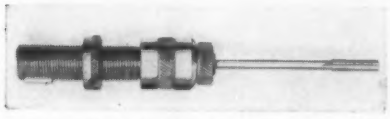


TAP HOLDER — *The American Cam Co, Hartford 1, Conn.* Tap holder is designed with the center hole running through rather than with blind hole common to conventional holders. This feature makes it possible to insert a full length tap without grinding off part of shank in order to seat tool in blind hole. In addition, design makes it possible to extricate broken tap without removing holder bushing or disassembling the holder from machine. Broken shank piece may be knocked out back of holder while on machine.

TAP HOLDER—*American Cam Co, Hartford 1, Conn.* Through-hole design; full adjustability over total of ¼ in.

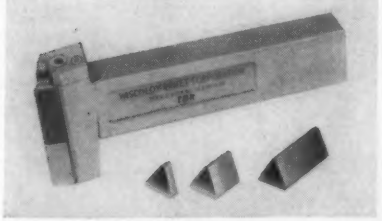
TOOLHOLDER—*Seaboard Steel Co of America, Inc, 1775 Broadway, New York 19, NY.* Takes ⅜-in. square or round toolbits and ½-in. cutting-off tools. Firmly held in split swivel ball clamped by one bolt in any position.

TOOLHOLDERS — *Newcomer Products, Inc, Latrobe, Pa.* Econo-Clamp mechanical units for use with triangular square and round carbide inserts range from 1½-in. length down to ¼-in. Throway Insert.



FLOATING HOLDER—*Scully-Jones & Co, 1901 S Rockwell St, Chicago 8.* Series "JT" lock-and-eject floating holders for taps and reamers. Threaded nut on holder nose revolves on ball bearings to lock 4-split chucks for taps and 2-split chucks for reamers.

TOOLHOLDER — *Detroit Reamer & Tool Co, 2830 E Seven Mile Rd, Detroit 34, Mich.* Postive-lock with solid machine shank and barrel, separate wedge, retainer, retainer ring, and locking ring. Right-hand or left-hand tools may be operated.

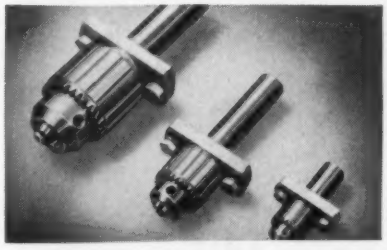


VERTICAL TOOLHOLDER—*Vascoloy-Ramet Corp, Waukegan, Ill.* Built-in carbide chipbreaker provides correct chip formation over wide cutting range for single chipbreaker width, and eliminates expensive chipbreaker grinding of inserts. All adjustment, location and clamping of the insert is done by one screw on top of the toolholder.

TOOLHOLDER—*Brookfield, Inc, 172 Newbury St, Boston 16, Mass.* Model BA-10 for use on No. 00 B&S machines. Features include: 25% lighter weight; adjustable V-jay feature; V-jaw section and shank parallel within 0.005 in. in 6 in., run-out less than 0.0001 in. per inch. Holding capacity is from 1/64 to 5/16 in.

REAMER HOLDER—*Green Mfg Co, Rockton, Ill.* Synthetic rubber float sleeve compensates for angular and out-of-parallel misalignment; eliminates chatter.

DRILL HOLDERS — *Waukesha Tool Co, Waukesha, Wisc.* For automatic screw and chucking machines, spade drill holders with short over-all length and straight shank are made in sizes from 1¼ to 3½ in. in cutting diameter. They are drilled for coolant and have two threaded coupling holes.



FLOATING HOLDER — *Barnaby Manufacturing Co, 7½ Knowlton St, Bridgeport, Conn.* Made in two parts —the shank, which has an integral flange, and a similar flange on which chuck is mounted. Two parts are fastened together by cap screws threaded into shank flange. Made in 8 sizes ranging from 14.50 to $26.

TOOLHOLDER BUSHING—*Barnaby Mfg Co Inc, 7½ Knowlton St, Bridgeport 3, Conn.* Toolholder bushing eliminating retaining rings and spring clips, facilitates setup on B&S automatics. They are furnished in sizes from ½ in. to 1¼ in. in dia and 13/16 to 19/16 in. long.

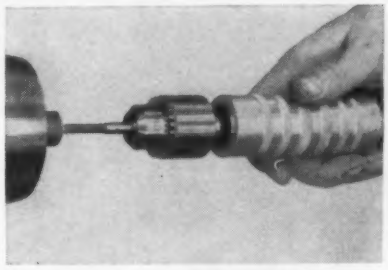
TAP HOLDER—*Barnaby Mfg Co, 7½ Knowlton St, Bridgeport, Conn.* Nonreleasing; equipped with cylindrical guide; will monitor severe tapping operations. Can be used on turret lathes as well as screw machines.

PILOT SLEEVE—*Pilot Tools Inc, 225 Lafayette St, New York 12.* Morse taper; permits taper-shank drills, reams, and end mills to be re-used. Five sizes, from 1 to 5.

TAPPING CHUCK—*Roddick Tool Co, 1023 N Pauline St, Anaheim, Calif.* Tap holder has floating action and uses two rubber-flex pallets to fit all taps from No. 10 to ⅝ in. No bushings are needed.

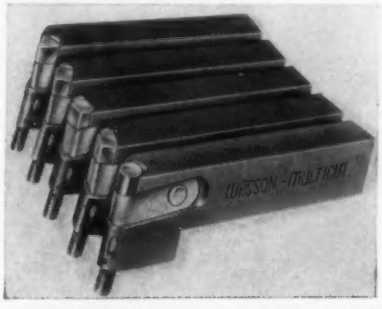
TOOLHOLDER SYSTEM — *Vascoloy-Ramet Corp, Waukegan, Ill.* Vertical toolholder and two new lengths of carbide inserts, in addition to standard 1½-in. inserts. Toolholder has built-in carbide chipbreaker; design permits using all of the carbide insert.

TOOLHOLDER—*Beaver Tool and Engineering Corp, Box 429, Royal Oak, Mich.* Morse taper shank and adjustable keeper key slot to fit No. 5 to 6 Morse taper spindle.



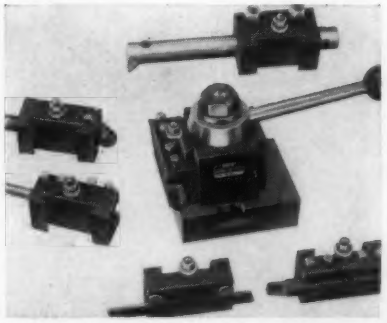
TAP & DIE HOLDER—*Cobb Precision Co, 1042 N Cole Ave, Hollywood 38, Calif.* For high-speed production on any lathe. Tool consists of No. 30 Jacobs chuck and arbor, 0 to 5/16 in. and special ½-in. shaft for mounting. One end of holder takes 13/16-OD button die.

FLOATING HOLDER — *Scully-Jones and Company, 1901 South Rockwell St, Chicago 8, Ill.* Lock-and-eject-type; for multiple-spindle reaming and tapping machines. Threaded nut on nose of holder revolves freely on ball bearings, drawing threaded chuck into taper seat and compressing it evenly on shank of tool.

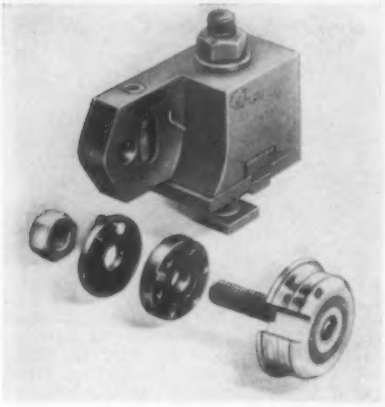


TOOLHOLDER — *Wesson Co, 1220 Woodward Heights Blvd, Detroit (Ferndale 20), Mich.* Incorporates precision-ground carbide height gage, permanently brazed to holder adjacent to insert slot.

CARBIDE TOOLHOLDER — *Wendt-Sonis Co, Hannibal, Mo.* For round, square, triangular, and diamond-shaped inserts. Carbide insert is cammed firmly against shank by heavy steel band.



TOOLPOST — *Aloris Tool Co, 80-82 Fourth Ave, New York 3.* Fits all lathes regardless of style of compound rest top. It has five interchangeable toolholders for turning, threading, drilling, cutting off, boring. Three sizes with toolbit capacities from ¼ to 1 in. and capacities of boring bars from ¼ to 1½ in.



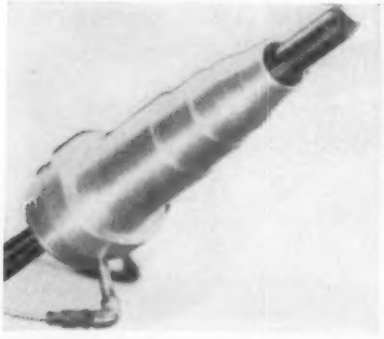
CROSS-SLIDE TOOLPOST—*American Cam Co, Hartford 1.* Holds circular form tools on automatic screw machines. Screw adjustment provides positive setting of cutting edge. Adaptool-post available for either front or rear slides.

TOP SLIDE—*Salvo Tool & Engrg Co, 26441 Gratiot Ave, Roseville, Mich.* Holds Salvo thread rolling attachments, for use in top position of B&S 2G, 0G, and 00 automatic screw machines.

HYDRAULIC CHUCKS — *De Witt Equipment Corp, 136 Lafayette St, New York 13, NY.* Operates at high speeds with unusual gripping power. It is possible to adjust pressure so fragile components can be held. Can be operated by existing hydraulic equipment or compact power unit can be supplied.

BORING CHUCK — *Last Word Sales Co, Detroit, Mich.* Offset chuck for holding boring bars, drills, and mills, fly tools, and similar equipment in milling machines and boring mills. Positive centering feature permits quick tool change.

HEAVY-DUTY ADAPTER—*Goddard & Goddard Co, 12280 Burt Rd, Detroit 23, Mich.* Shell end mill adapter is standardized for No. 50 N S drive milling machines, available in two arbor sizes. Mounts directly on front spindle flange of machine. Standard bolt holes and key slots provide for rigid mounting.



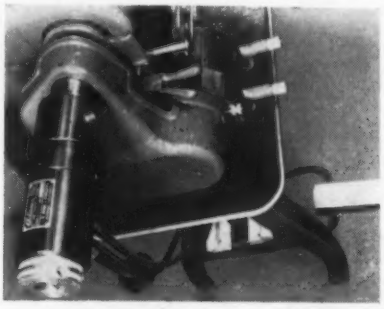
SIZING MANDREL—*National Pioneer, Inc, 1134 Nebraska Ave, Toledo 7, Ohio.* Automatic, for all Sunnen and other horizontal honing machines. Can be used for manual applications or, in combination with automatic stroking attachment, provides completely automatic honing and sizing unit.

LATHE TOOL—*Shultz Mfg. Co, 3444 Orange Ave, Dept N-25, Cleveland 15.* Identi-Center, combination rotary stock stop and center-drillholder occupies one hole in hex turret. When measuring off-stock, hardened cap of tool rotates on ball bearing when it meets stock.

STANDARD SPINDLE LINE—*Russell T Gilman, Inc, 2410 N Farwell Ave, Milwaukee 11, Wis.* To fit No. 0 or No. 1 Morse taper shanks with ⅛, 3/16 or ¼-in. collets. Dimensions run from 4⅝ in. to 8 in. in length and 1⅝ to 2½ in. in dia. Longitudinal adjustment of the spindle is provided by nuts at either end of the quill housing.

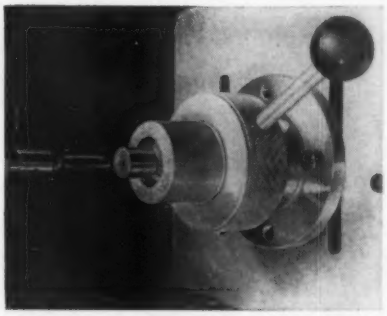
MACHINE SPINDLE—*Standard Electrical Tool Co, 2488 River Rd, Cincinnati 4, Ohio.* Heavy duty workhead for vertical mounting heavy-duty spindle for horizontal operation, motorized spindle for internal grinding; spindle with wheel flanges.

MILLING CHUCK—*J & S Tool Co, Inc, Livingston, NJ.* Jahrl milling chuck manufactured in this country by J&S. Clamping nut is provided with ball bearing. Collet has locking taper which releases automatically when nut is turned one rev.



COLLET CLOSER—*I W Adams & Associates, 4200 Burbank Blvd, Burbank, Calif.* Air-operated, for 1⅝-in. or smaller hollow spindle lathes, using either internal or external collets, with max 1-in. bar stock capacity; for spindle speeds to 4500 rpm. Drawbar pull can be instantly changed from 0 to 5000 lb without changing air pressure.

COLLET FIXTURE—*Smith Sales Co, 193-16 99th Ave, Hollis, NY.* Fits many existing standard collets from 1/16 to 1-in. dia; for use in secondary drilling, tapping, counterboring, milling, slotting, and reaming.

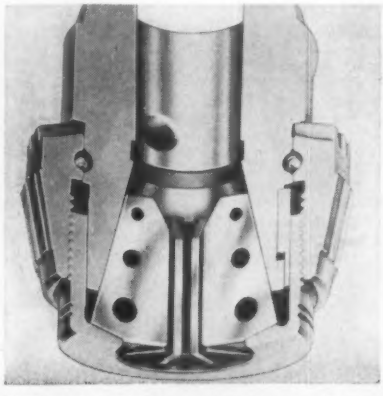


COLLET CHUCK—*Royal Products, 88 Union St, Mineola, LI, NY.* Regal 5C has 1-in. capacity, uses standard 5C collets now applicable to small lathes.

EXPANDABLE MANDREL DRIVER—*Superior Hone Corp, 1607 Elreno St, Elkhart, Ind.* For vertical use in drill-presses for honing from 3 to 6 in. Set of stones are available for each mandrel.

COLLETS—*Royal Products, 88 Union St, Mineola, LI, NY.* Self-releasing, with clover-leaf grind. Operator can release unit and work automatically, without pumping drawbar. Sizes from 1/64 to max capacity.

EXPANDING ARBOR—*The Medelton Co, 335 E 142nd St, Bronx 54, NY.* For secondary turning and facing operations. Arbor is inserted in place of standard collet, and proper adapter is slipped on.

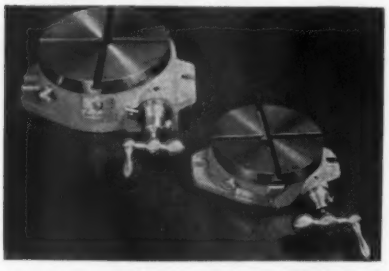


COLLET CHUCK—*The Jacobs Manufacturing Co, West Hartford 10, Conn.* Model 96 permits use of Jacobs Rubber-Flex collets on many different machine tools. Made in two types differing in back mounts. Mounted on body by deep-groove ball bearing is hardened steel geared sleeve having ground threaded bore engaged with collet-closing nose.

INDEX TABLE—*Air-Hydraulics, 248 Belden Rd, Jackson, Mich.* Model No. 48 outside turning and locking index table has all working mechanism outside table. The 48-in.-dia, 8½-in. thick unit has six stations, is designed for hydraulic operation. Available in sizes from 20 to 48-in.-dia, and with 6 or more stations.

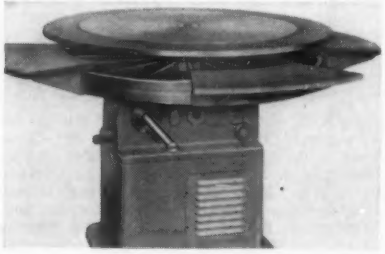
AIR INDEX TABLE—*Air-Hydraulics Inc, 248 Belden Rd, Jackson, Mich.* Model 1405 features cushioned stop and air speed both adjustable to compensate for variations in load weights and diameters. When operated with a 200-lb load, 22 in. in dia, using an 8-station ring, indexes were made at a rate of 100 per min.

AIR INDEXING TABLE—*Precision Detroit Co, 20100 Sherwood, Detroit 34, Mich.* Accuracy to ±0.001 in. on an 11-in. work circle. It has Geneva motion, indexing time of 32/r sec, and 3, 4, 6, 8, or 12 stations. Load capacity is 500 lb; operates at 80 to 100 psi.



ROTARY TABLE—*Benchmaster Mfg Co, 1835 West Rosecrans Ave, Gardena, Calif.* An 8-in. table added to 6-in. line. Both models feature low height, the 8-in. table being 3⅝ in. high, the 6-in. measuring 2⅛ in. Adjustable zeroing mark permits accurate table settings; dial graduations are 0.1°.

HYDRAULIC INDEX TABLE—*Michigan Drill Head Co, Hazel Park, Detroit 34, Mich.* Positive location from tapered shot bolt. Feeding units are stationary during indexing. Four sizes: 20, 30, 42, and 60 in.; can be bored for number of stations from two to fifteen.

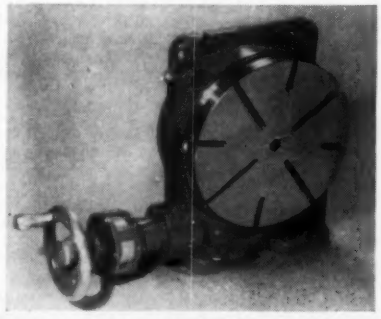


TURRET INDEXES—*Swanson Tool and Machine Products, Inc, Erie, Pa.* Dwell times range from 0.835 sec to infinity. Clutch-operated models with 8, 16, 24, or 32 work stations and 20, 30 or 40-in. diameters. Max indexes per hour range up to 2154.

ROTARY TABLE—*Troyke Mfg Co, 4422 Appleton St, Cincinnati 9, Ohio.* Camlocking table for quick manual rotation is hand-scraped on two bearing surfaces to fit the cast-iron base. Center bearing is adjustable to take up wear.

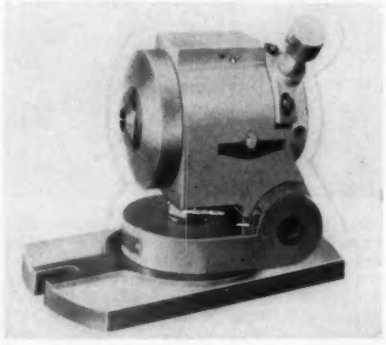
ROTARY TABLE—*Giddings & Lewis Machine Tool Co, Fond du Lac, Wis.* Air-Life contains collapsible index pin which eliminates play in mechanism and compensates for wear. Table floats on air, is indexed by hand, settles on plain non-lubricated seat.

POSITIONING TABLE—*Fosdick Machine Tool Co, Cincinnati 23, Ohio.* Automatic positioner; used on Fosdick jig borers and automatic positioning machines; now available as a separate unit.



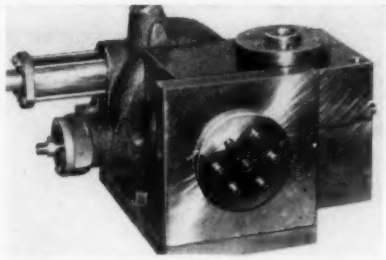
ROTARY TABLE—*Moore Special Tool Co, Inc, 740 Union Ave, Bridgeport 7, Conn.* Model 2 11-in. table has accuracy of ±6" throughout 360°. Angular spacing is accomplished by non-disengageable, thread-ground worm and mating gear. For jig borers and jig grinders.

ROTARY TABLE—*Vulcan Tool Co, 730 Lorain Ave, Dayton, Ohio.* For surface grinders; uses regular airline, attains speeds of 40 to 100 rpm. Only machine crossfeed is used. Can be used on sine plate or angle fixture using standard surface grinder wheel.



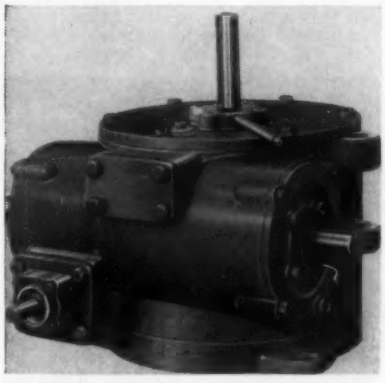
DIVIDING COLLET HEAD—*Kuma Tool Co, 8751S State St, Chicago 19, Ill.* Model C-404 for production work of equal or irregular circular spacings and CA755 Quick-Action collet closure. 360° swivel; 0 to 90° inclination; indexing plates from 2 to 36 spacings.

DIVIDING HEAD—*H P Preis Engraving Machine Co, 15 Industrial Branch, Hillside, NJ.* Adjusts from horizontal to vertical position, rotates 360°, has fine adjustment in minutes. It includes a 3-jaw, 3-step chuck. External chucking capacity is 4⅛ in.



INDEXER—*Erickson Tool Co, 23rd & Hamilton, Cleveland 14, Ohio.* Indexes to 500 positions; self-contained shock control unit can be adjusted to meet varying loads. Operation is by air or hydraulics.

CALIBRATED FIXTURE — *Machine Products Corp, Detroit.* Calibrated for movement in all planes; optical micrometer microscope with glass vernier reticle permits direct reading to 5 sec of an arc. Power drive moves table.



INDEXING UNIT—*Standard Tool & Manufacturing Co, 740 Schuyler Ave, Lyndhurst, NJ.* Cam-operated; increments of either 8, 12, 16, or 20 can be obtained during a complete cycle. Dimensions are 17 in. long by 16½ in. wide by 13¾ in. high.

INDEXING TABLES—*A K Allen Co, 57 Meserole Ave, Brooklyn 22, NY.* Model 725-F with 4, 6, 8, 12, or 24 positions can be mounted horizontally or vertically; guaranteed accurate within two thousandths at OD of 7¼-in.-top table. Model 725-FA has no controls; 725-FB is equipped for automatic operation.

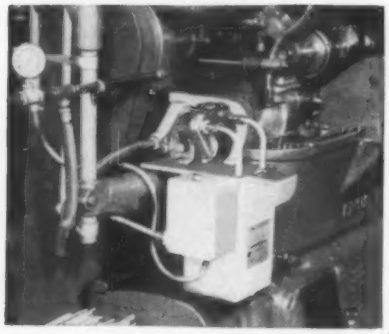
CONTROL VALVE — *General Pacific Corp, Machine Tool Div, 1501 E Washington Blvd, Los Angeles, Calif.* For automatic synchronization of indexing of rotary table. Used in conjunction with drill feed. For use with Model A and D drill feeds.

INDEXING FIXTURE — *M and H Products, Box 1057, Danbury, Conn.* 90° indexing of round stock. Hardened and ground steel block with centered collet seat and drawnut is square and parallel within 0.0005 in.

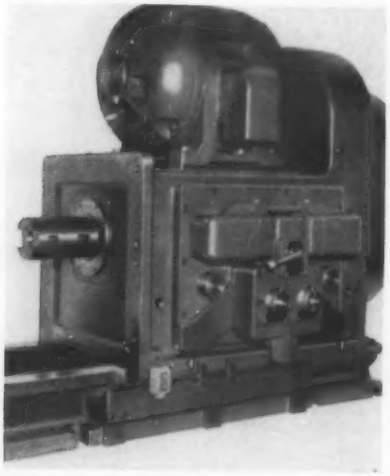
DIVIDING HEAD—*McGlynn Hays Industries, Inc, Belleville 9, NJ.* Head uses one index plate with 6 holes. With dial indicator, gives divisions to 12" of arc. Angular setting of spindle to 5°.

TRANSFER MECHANISM — *Shalin Engineering Co, Birmingham, Mich.* Indexes, advances, and unloads 22-lb brake drums through a 600-ton coining press. Basic design is applicable to wide range of feeding and unloading applications.

ROTARY STOCK STOP — *Barnaby Mfg Co, 74 Knowlton St, Bridgeport 8, Conn.* A live head which rotates freely on stock stop during screw machine and turret lathe operation; reported to completely eliminate marring the finished end during stock feed.



HYDRAULIC FEED ATTACHMENT —*Aurora Precision Devices, Inc, 318 Anderson Blvd, Geneva, Ill.* For screw machine stock; hydraulic operation eliminates feed fingers. Models are available for all No. 00, 0, and 2 Brown & Sharpe machines and feed stock from 1/16 of an in. to 1⅛ in. in dia.



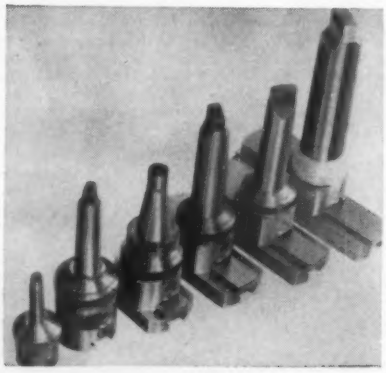
HYDRAULIC FEED—*Hoefer Mfg Co, Freeport, Ill.* Speeds range from 52 to 1400 rpm, depending on motor speed; stroke is 18 in. max. Feed ranges infinitely, starting at ½ ipm to max.

TOOLBITS—*Armstrong Bros Tool Co, 5200 W Armstrong Ave, Chicago 30.* HSS and cobalt-steel, ground on four sides with ends bevelled 10°. Both types in 12 sizes from 3/16 to 1¼-in. sq.

HSS BLADES—*Armstrong Bros Tool Co, Dept R-2, 5200 W Armstrong Ave, Chicago 30, Ill.* Cutoff blades have ground top and bottom edges and bevel-ground sides.

TOOLBITS AND BLADES — *Armstrong Bros Tool Co, 5200 W Armstrong Ave, Chicago 30, Ill.* Toolbits of HSS are ground on four sides and ends are beveled 10°. Ground cutoff blades made of HSS come beveled and with sides, top, and bottom edges ground.

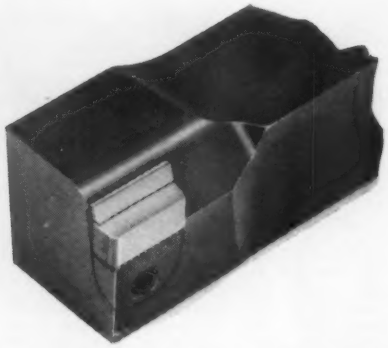
TUNGSTEN CARBIDE TOOLS — *Willey's Carbide Tool Co, 1342 W Vernor Road, Detroit Mich.* Line includes broaching tool, drill, and drill bushing. Broaching-tool line — carbide-tipped, flat-type; carbide-tipped single-broaching; solid carbide wiping-blade; solid carbide combination broach and burnishing tool; and solid carbide broaching rings.



BORING TOOLHEAD—*Chandler Tool Company, Muncie, Ind.* Boring, facing, turning, grooving and undercutting—all in one setup. Power feed for facing, longer slide travel, fine adjustment, T-slot positioning of cutting bar.

BORING TOOL — *Portage Double Quick Tool Co, 1026 Sweitzer Ave, Akron 11, Ohio.* Enclosed micrometer-adjusting screw; lock screw releases wedge clamp; eccentric hole in wedge prevents it from turning; wedge clamp angle offers high mechanical advantage.

COMBINATION CUTTERS — *Econotool Co, Jenkintown, Pa.* Alloy-steel milling-cutter bodies use standard carbide or tool-steel bits or salvaged undersize lathe tools. Standard tools may be modified for step milling, boring, undercutting.



INSERTED-CARBIDE TOOL — *The Viking Tool Co, Shelton, Conn.* Straight turning tool incorporates an independent, adjustable chipbreaker. Inserted element has bottom serrations and is inserted in broached slot. Hardened tool steel serrated semi-cylindrical wedge lock is located underneath carbide insert.

CARBIDES — *Adamas Carbide Corp, Kenilworth, NJ.* 434 finishing cuts at high temperature; 548—general finishing and light roughing; GG—high-tantalum grade; 474—modification of GG with less strength.

CEMENTED CARBIDE — *Carboloy Dept of General Electric Co, Detroit 32, Mich.* Grade 350, a medium-duty high wear-resistant steel cutting grade cemented carbide for light roughing and general finishing. Said to provide up to 30% better performance than existing carbides in this machining area.

TUNGSTEN - CARBIDE TOOLS — *Sandvik Steel, Inc, Sandvik Coromant Div, 111 Eighth Ave, NY 11, NY.* Line of tungsten-carbide-tipped tools, blanks, and inserts, from Sweden, is claimed to have high production life as result of basic purity of raw material, plus close unified control.

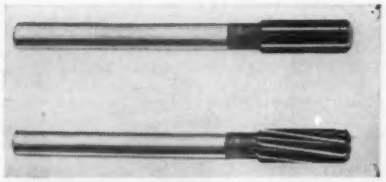
TOOLBITS—*Kennametal Inc, Latrobe, Pa.* Triangular inserts are seated in a triangular slot to hold up under side thrust when cutting to left or right.

TURNING TOOLS—*The Gairing Tool Co, Box 478, Detroit 32.* Chip-Hog line includes carbide inserts clamped to high-alloy steel shanks, adjustable in two ways. Greater rigidity allows max feeds and speeds without carbide cracks.

CUTOFF TOOL — *Portage Double Quick Tool Co, 1026 Sweitzer Ave, Akron 11, Ohio.* V-blade support locates and holds carbide insert that may be changed in 15 sec. Insert is clamped under heavy offset chip breaker.

OFFSET BORING HEAD—*Micro Instrument Co, 80 Trowbridge St, Cambridge 38, Mass.* No. 820 uses interchangeable shanks to adapt to variety of work. Micrometer-adjusting collar moves tool radially 0.050 in. per rev. Maximum offset with standard bar is ¾ in. All slide bars take ¾-in.-diameter tool shanks.

BORING TOOLS—*Bokum Tool Co, Detroit 38.* Short-necked for boring precision holes. 25 sizes in Style A for through boring and Style B for bottoming. HSS and carbide-tipped.



CHUCKING REAMERS—*Chicago-Latrobe Twist Drill, 411 West Ontario St, Chicago 10, Ill.* Spiral flute, straight shank, in 64th sizes from 5/64 to 31/64 in. Also straight flute, straight shank; wire gage; letter; and decimal sizes.

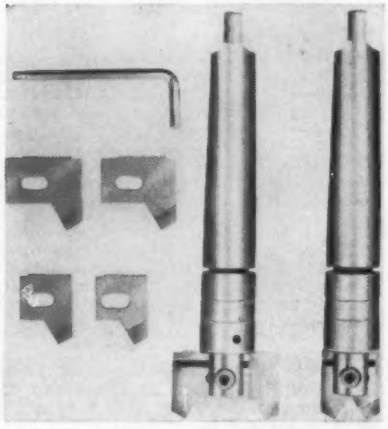
UTILITY DRILL — *Chicago-Latrobe, 411 W Ontario St, Chicago 10.* For applications requiring a sturdier, shorter unit. In 3/64 through ½-in-dia; wire gage sizes, No. 1 through 60.

DRILLS—*Chicago-Latrobe, 411 W Ontario St, Chicago 10.* Harduty units for hardened die steel heat-treated to Rockwell C-40 to C-65. Sizes from 1/16 through ¾ in. in increments of 1/32-in. dia.

CARBIDE-TIPPED REAMERS—*Chicago-Latrobe, 411 W Ontario St, Chicago 10.* Harduty No. 1407 have HSS bodies, taper shanks, and straight flutes. Reams accurate holes in hardened steel having a R_c 40 scale.

COUNTERBORES & SPOT FACES—*Union Twist Drill Co, Athol, Mass.* HSS with interchangeable pilots; 4 styles, long and short set in both straight and taper shank; 2 additional for aircraft, long and short with ¼-in. shanks for use with portable equipment.

TAPER REAMER — *Mohawk Tools, Inc, Montpelier, Ohio.* Right-hand helix on sub-land taper roughing reamer is said to eliminate 70% of torque and increases life ten times. Circular grind on small-dia blades eliminates tendency toward side cutting. Each step has separate flutes. Resharpening is done by touching up blade ends only.



ADJUSTABLE DRILL—*Hayden Twist Drill Co, Detroit 38.* Smaller model covers 1 to 2 in. with two blade sets. Scroll-adjusted; HSS or carbide-tipped blades.

GUN DRILLS — *Whitman & Barnes, Plymouth, Mich.* Carbide-tipped; available with solid high-speed body or oil-tube body. In both cases oil under pressure is used to cool the cutting lip to force the chips out of the hole.

COUNTERSINK, DEBURRING—*The Weldon Tool Co, 321 Frankfort Ave, Cleveland, Ohio.* Single-cutting-edge tools are for 82° countersinking and for 90° deburring operations.

DRILLING TOOL — *Robert H Clark Co, Beverly Hills, Calif.* Steel cast iron, and softer metals may be bored and sized with the Hole-Maker, a three-bladed piloted boring tool.

DRILL—*National Twist Drill & Tool Co, Rochester, Mich.* For use with flexible drive shafts or extension arms. Combines adapter with threaded-shank drill.

CUTTER AND HOLDER — *Bokum Tool Co, Detroit 38, Mich.* Tool consists of two parts; a cutter replaceable when worn, and holder made of heat-treated alloy steel. Cutting head, in choice of super-HSS or carbide-tipped, is made in four types.

TWIST DRILLS—*Hayden Twist Drill Co, 8626 Lyndon Ave, Detroit 38, Mich.* Four sets, by 1/32nds and 1/64ths to ¼ and ½ in.

COUNTERSINK—*Whitman & Barnes Div, United Drill & Tool Corp, Plymouth, Mich.* HSS center reamers or countersinks are available with 90°, 100°, 110°, and 120° included angles. Sizes are from ¼ to ¾ in. in ⅛-in. increments.

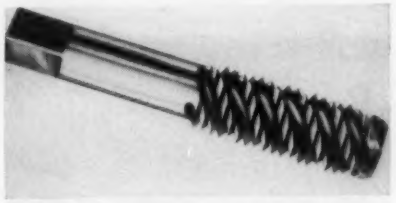
CARBIDE REAMERS—*Super Tool Co, 21650 Hoover Rd, Detroit 13.* Rough ground, semi-finished; delivered with adequate grinding stock.

TWIST DRILL—*Super Tool Co, 21650 Hoover Road, Detroit 13, Michigan.* Has spiral on face of carbide tip blended into drill for better chip clearance. End of drill is radically relieved. Has extra heavy carbide tip and extra heavy web.

TOOLS—*Wetmore Tool & Engineering Co, 5320 E Washington Blvd, Los Angeles 22, Calif.* Carbide-tipped combination ream c'bore and facing tools form standard female fitting specified in AND 10050 design standard. One for turret lathe or screw machine use, one for drillpress.

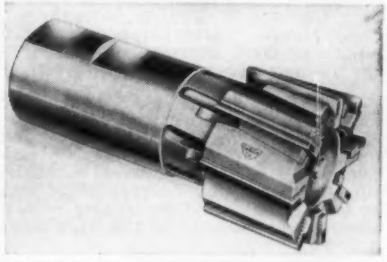
SPEED BITS—*Edw L Sibley Mfg Co, Inc, Bennington, Vt.* In ⅝, ¾, ⅞, and 1-in. sizes; only one shank needed for all. Double curve helps expel chips, reducing or eliminating clogging.

FLY CUTTER—*Mico Instrument Co, 80 Trowbridge St, Cambridge 38, Mass.* Constructed of steel with ½-in.-dia shank; uses 3/16-in. HSS cutting bit. Micrometer screw provides cutting range of 1⅛ to 7½-in. diameter.

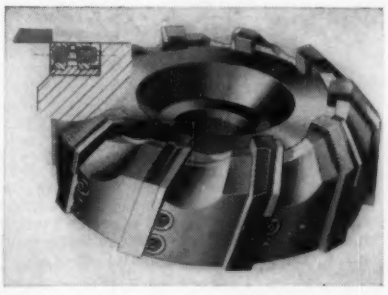


TAP—*Shearcut Tool Co, Ever-Lock Tap Div, 7045 Darby Ave, Reseda, Calif.* Produces self-locking internal thread; taps were originally for high-temperature applications in turbo-jet engines and are produced in Class PG-II only, but are made to produce three classes of fits.

TAP—*Horspool & Romine Mfg Co, 5850 Marshall St, Oakland 8, Calif.* Single pass; for single or multiple-start Acme threads in dias from ¾ to 2½ in.



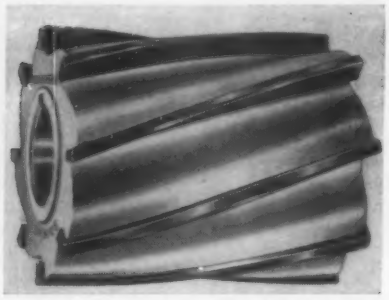
STRAIGHT END MILLS—*Goddard & Goddard, 12280 Burt Rd, Detroit 23.* Straight-shank, carbide-blade end mills, one for cast iron and non-ferrous metals, the other for steel. Shanks are 2 in. in dia; cutting faces from 2 to 4 in.



FACE MILL—*Wesson Co, 1220 Woodward Heights Blvd, Detroit 20, Mich.* For extra-heavy steel and cast-iron roughing operations. Special 1½-in.-high carbide-tipped blades, capable of ⅞-in. depth of cut, are locked with Dual Wedg locks.

MILLING CUTTER—*Wesson Co, 1220 Woodward Heights Blvd, Detroit 20, Mich.* Feeds 100 ipm with four blades per inch of diameter. For high-feed, cast iron finishing; consists of hardened steel body with broached blade slots, Wessonmetal carbide-tipped blades, and hardened steel wedges.

LOCK CUTTERS—*Wesson Co, 1220 Woodward Heights Blvd, Detroit, Ferndale 20, Mich.* Improved stagger-tooth and half-side milling series, recommended for general-purpose straddle, face, gang, milling, and slotting operations.



SLAB MILLS—*Sonnet Tool & Mfg Co, 576 No Prairie Ave, Hawthorne, Calif.* Helicarb, for heavy stock removal on wide slab cuts, is said to combine efficient cutting action of true helical flute design with hardness of carbide. Clearance on end of teeth permits machining such surfaces as steps, shoulders, and webs.

SHELL-END MILLS—*Sonnet Tool & Mfg Co, 576 N Prairie, Hawthorne, Calif.* Helical; carbide-tipped over full length of flute. Cutting edge 1¾ or 2 in; diameters range from 3 to 6 in.

END MILLS—*Sonnet Tool & Mfg Co, Hawthorne, Calif.* Helical carbide end mills are reported to give more production than comparable carbide-tipped cutters and finishes of 20 rms or better. They feature cutting with a shearing action due to the high helix angles.

END MILLS—*Putnam Tool Co, 2981 Charlevoix Ave, Detroit 7, Mich.* Size from 1½ in. dia, made to replace integral tapered-shank end mills on large boring mill, profiling, and duplicating jobs.

MILLING CUTTER—*Millit, Inc, 55 Flint St, Rochester, NY.* Cutting is done against long side of solid carbide insert. With a ¼ x ⅜ x 1½-in. carbide blank, the blade is 225% stronger when the ¼-in. side is the cutting face, and the ⅜-in. side is the relief face.

SHELL, FACE MILLS—*Millit, Inc, 55 Flint St, Rochester 8, NY.* Shell end mills from 4 to 8-in. diameter and face mills from 8 to 14 in. in diameter with replaceable blade. Design has rake angles built into blade. Carbide, HSS or cast alloy cutting tips.

MILLING CUTTER—*St Clair Tool Corp, 300 1st St, Harrison, NJ.* Cutter bodies in diameters from 2½ to 8¼ in., and with 3 to 16 blades, are made with setscrew adjustments for positioning and clamping of mechanically held bits; available in carbide, HSS, and alloy steel, and may be grooved along edges for 10° positive rake.

FACE-MILLING CUTTER — *Super Tool Co, 21650 Hoover Road, Detroit 13, Mich.* Solid-carbide inserted-blade; mills cast iron, malleable iron, and brass. Blades are extra heavy and are arranged radially. Sizes of 6, 8, 10, 12, and 14 in.

SPIRAL SIDE AND FACE CUTTERS —*Clarkson, Inc, 4004 E 8 Mile Rd, Detroit 34.* 18% tungsten HSS with special tooth lip, maintaining cutting angle after regrinding.

MILLING CUTTER—*Precision Industrial Tools, 5937 North Knox Ave, Chicago 30, Ill.* Designed to hog metal at higher speeds with heavier cuts. Spiral serrations break metal chips into small particle. Sizes from 7/16 to 2 in.

CARBIDE CUTTERS—*Nelco Tool Co, Manchester, Conn.* Shell mills, 6-in. and 2-in. face mills, and No. 50 NMTB taper-shank end mills are made with longer-life alloy bodies, copper or cadmium-plated.

END MILLS—*Metal Removal Co, 1546 N Orleans St, Chicago 10.* Super high-speed Blackhawk for use on tough alloy steels and abrasive ferrous and non-ferrous materials; hardness of 66 to 67 Rockwell C.

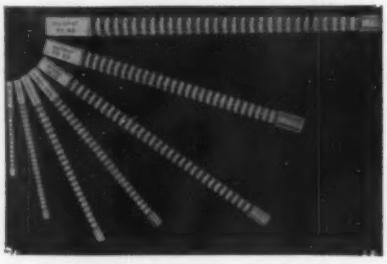
MILLING CUTTERS — *Union Twist Drill Co, Butterfield Div, Derby Line, Vt.* And end mills have been added to the Butterfield line of cutting tools.

CUTTERS, DRILL TIPS — *Adamas Carbide Corp, Kenilworth, NJ.* Preformed helical blades for milling cutters include helix-formed faces and clearances, but flat bottoms and back. Drill tips have flute shape that blends with 15° helix of drill body.

CUTTER—*The Ingersoll Milling Machine Co, Rockford, Ill.* Shear Clear face mill feeds more than 100 ipm of rough milling surfaces of automobile engine blocks and heads; sizes from 2½-in.-dia up.

SURFACE BROACH—*Nat'l Broach & Machine Co, 5600 St Jean Ave, Detroit 13.* Designed for broaching cylindrical parts. External type processes up to half the periphery, and is used on single- or dual-ram machine; internal type is mounted on table of utility hydraulic press and part is pushed down through it to finish entire periphery.

BROACHES — *National Broach and Machine Co, 5600 St Jean Ave, Detroit 13, Mich.* Solid HSS; produce large internal running gears in single pass without finishing operations. The broaches, a 70-in. long rougher and 36-in. long finisher produce a 66-tooth, 5½-in.-OD internal gear.



BROACHES—*The du Mont Corp, Greenfield, Mass.* Minute Man line finishes square hole in drilled, reamed, or cast bore in one pass, in less than a minute. May be used in hand-operated arbor or hydraulic press. Eight sizes from 3/16 to ¾ in. sq.

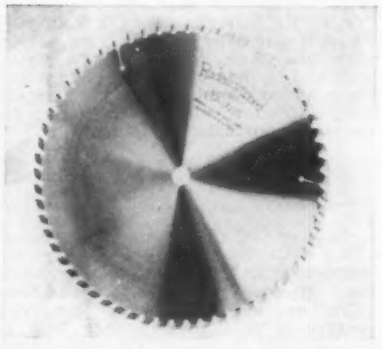
CHAMFERING TOOL—*Nobur Mfg Co, 717 N Victory Blvd, Burbank, Calif.* Sheet-metal deburring tool cleans front and back edges in single entry with self-actuated, piloted blade. Another chamfering tool deburrs facing edges of two in-line holes.

TOOL LINE — *Heller Brothers Co, Newcomerstown, Ohio.* Chatterless countersinks in HSS or carbide; solid-carbide center lap to replace mounted points; carbide and internal grinding burrs; and internal grinding wheels for elimination of dressing.

MANDREL NIBS — *General Electric Co, Carboloy Dept, Detroit 32, Mich.* Cemented carbide, brazed, for drawing steel, aluminum, and other tubing materials. Standard sizes are 0.450 to 1.250 in.

CARBIDE BURS—*Starlite Industries, 58th at Market St, Philadephia 39.* Starbides have superfinished cutting edges; 12 styles in ⅛-in. shank; 12 in small diameters with 3/32-in. shank.

SLOTTING SAW—*Millit, Inc, 55 Flint St, Rochester 8, NY.* Long carbide tips anchored in body slots below flute depth for better braze strength. Any decimal width from ⅛ to ½ in.



RADIAL SAW—*Radial Cutter Mfg Corp, 831 Bond St, Elizabeth 4, NJ.* Blade will cut through bronze barstock in 4 sec. Cuts aluminum extrusions, 24, 53, 75, 61ST, 75 and 14ST6, as well as solid hard stock; can operate 200 hours before sharpening.

RECESSING TOOL—*American Cam Co, Bloomfield, Conn.* Model B; cam-actuated by forward motion of turret. Moves radially into work; cam action holds close tolerances.

SAW BLADES — *Independent Blade Corp, Joliet, Ill.* Seventeen types for all reciprocating saws.

CUTOFF BLADES — *American Cam Co, Inc, Hartford 1, Conn.* Special alloy steel of tungsten, chromium, cobalt, carbide, and other metals. Initial hardness 60-63 R_c.

CUTOFF BLADES — *Cleveland Twist Drill Co, 1242 E 49th St, Cleveland 14.* Mo-Max cobalt. Sizes: 1/16 x ½ x 4½ to ¼ x 1⅝ x 7 in.

HACKSAW BLADE — *Capewell Mfg Co, 60 Governor St, Hartford 2, Conn.* Made of HSS with 18, 24, or 32 teeth per inch.

GRINDING WHEELS—*Fuller Merriam Co, 70 Water St, West Haven, Conn.* Silicon carbide wheels for grinding tungsten carbide tools; ingredients in vitrified bond, combined with distribution of abrasive particles, account for wheel's performance.

RESINOID BOND—*U S Diamond Wheel Co, Aurora, Ill.* Pressurelock-224 material is available in all diamond wheels made by company. Does not smear, and holds wheel shape, allowing faster, longer cutting.

GRINDING WHEELS—*Merit Products, 4023 Irving Pl, Culver City, Calif.* Multiple Grind-O-Flex wheels mounted on same portable-tool shaft by adding special sleeve. From 2 to 5 wheels may be mounted.

GRINDING WHEEL—*Electro Refractories and Abrasives Corp, 344 Delaware Ave, Buffalo 2, NY.* Vitrified-bond; for abrasive-resistant materials.

DIAMOND WHEELS—*Precision Diamond Tool Co, Elgin, Ill.* Line has ingredient added to bond to provide porosity to efficiently grind carbide. PSM Steel Bond wets and bonds itself to the diamond particles.

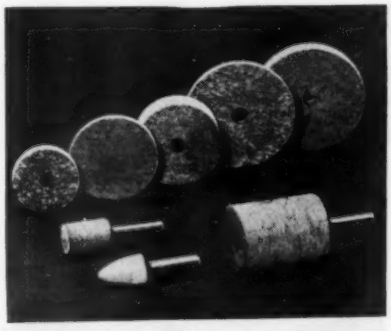
DEPRESSED-CENTER GRINDING WHEELS — *The Carborundum Co, Niagara Falls, NY.* For rough grinding, weld removal, cut-off and slotting operations on ferrous and non-ferrous metals, and non-metallics. Wheels are constructed with glass-fiber-reinforced resin bond, come in sizes of 7 and 9⅛-in. dia, ⅛, 3/16, and ¼-in. thickness, and contain a ⅞-in. arbor.

REINFORCED WHEELS — *Atlantic Abrasive Corp, South Braintree 85, Mass.* Depressed center disks are available in 7- and 9-in. dia, with thicknesses from ⅛ to ⅜ in., and sizes for straight disks range from ½ in. up to 10 in. dia, and 1/16 to ½ in. thick.

SNAGGING WHEEL — *Norton Co, Worcester 6, Mass.* "K" Bond for speeds up to 6500 sfpm, said to give up to 30% longer life with faster, freer cut in rough grinding cast iron.

DIAMOND WHEEL—*Action Diamond Tool Co, 4545 W Grand Ave, Chicago 39.* Resin diamond wheel for dry grinding. The bond is non-loading.

POLISHING WHEELS — *Sandusky Abrasive Wheel Co, 623 W Ranson St, Kalamazoo, Mich.* Rubber-bonded Sawco can give a number of degrees of finishes by varying pressure between work and wheel.



ABRASIVE WHEELS—*Metal Removal Co, 1546 N Orleans, Chicago 10.* Flextex line; points, straight wheels, disks, cutoff wheels. For hard-to-grind materials.

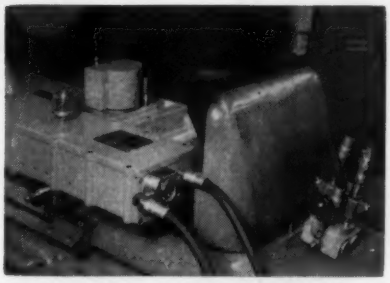
ABRASIVE DISK—*Minnesota Mining & Mfg Co, 900 Fauquier St, St Paul 6, Minn.* Depressed center 3M Type G, made of aluminum oxide mineral in reinforced fabric-and-resin construction. Two sizes in grit 24-7 and 9⅛ in.

CLOTH BELT—*Michigan Abrasive Co, 11900 E Eight Mile Rd, Detroit 5.* Coated-abrasive Resinwet, 50 in. wide uses water as coolant.

WHEEL FORMING ATTACHMENT—*Pratt & Whitney, Div Niles-Bement-Pond & Co, West Hartford 1, Conn.* Form-truing of grinding wheels up to 14 in. in dia; used for grinding dies, punches, flat or circular forming tools. Capacity is up to 2 in. wide and 1 in. deep in one setting. Basic construction is vertical pantograph, operated by tracing templet on 5 to 1 ratio.

WHEEL DRESSER—*Perfex Gage & Tool Co, 123 Avery St, Mt Clemens, Mich.* Tangi-Matic wheel dresser handles large wheels because removable arm can be extended. Incorporated built-in direct-reading micrometer.

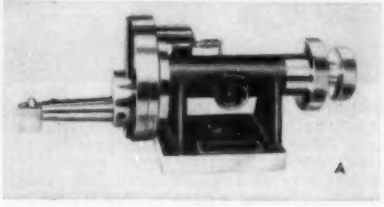
WHEEL DRESSER—*L Newman Tool, Die, & Machine Work, 1001 24th St, Oakland 9, Calif.* Model 5 has sealed ball bearings and hardened cutters for heavy grinding. Cutters interchangeable with abrasive wheel.



HYDRAULIC DRESSER — *Hoglund Engineering & Mfg Co, 343 Snyder Ave, Berkeley Heights, NJ.* Model 32 for surface grinders; set up by removing cover plates and changing contour templets. Diamond movement across wheel is hydraulically actuated.

RADIUS DRESSER—*Sperman Metal Specialities, 2199 E 21st St, Brooklyn 29, NY.* Spring loading for spindle of Mighty Midget cuts chatter; less passes cut radius on grinding wheel; diamond lasts longer.

AUTOMATIC DRESSER — *Cleveland Industrial Tool Co, Inc, Cleveland 17.* Hydraulic infeed unit for centerless grinders provides wheel-dressing, diamond-turning, and coolant-control device.



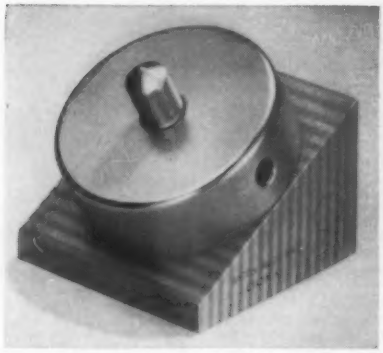
WHEEL DRESSERS — *Last Word Sales Co, Detroit, Mich.* Model A with a 3.400 center height, can be used to dress any angle tangent to a radius, concave or convex. Model B (2.600 center height) will dress a radius and any two tangent angles in one operation. Model C incorporates a tilting feature designed to compensate for compound angles involved in grinding form tools.

GRINDING-WHEEL DRESSER—*The Desmond-Stephan Mfg Co, Urbana, Ohio.* Hardened steel side washers pressed into handle casting protect from wear of revolving cutters. Hole in end of dresser handle is provided for fastening dresser to grinder.

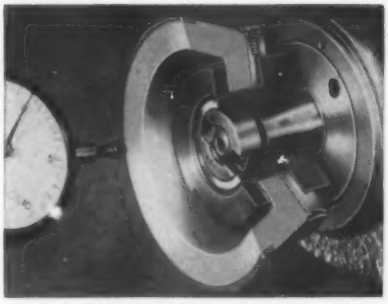
RADIUS DRESSER—*General Scientific Corp, 603 N La Brea Ave, Los Angeles, Calif.* Designed to give machinist perfect feel of wheel when dressing radius. Range: radius of 0.001 and 0.002 in. up to 9/16 in. Price: $47.50.

WHEEL DRESSER—*Desmond-Stephan Mfg Co, Urbana, Ohio.* Crackerjack Jr has 3-in. abrasive dressing wheel inclined at 15° to machine grinding wheel. Features sealed bearings with wick lubricators.

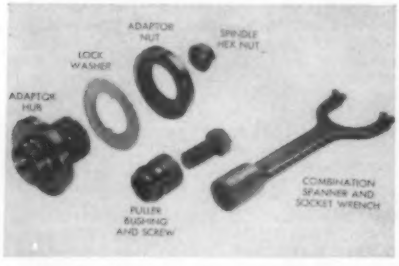
WHEEL GUARDS — *Morrison Products, 16816 Waterloo Rd, Cleveland, Ohio.* Flaring cup and straight cup wheels; guards revolve with wheels. Four flaring sizes and three straight.



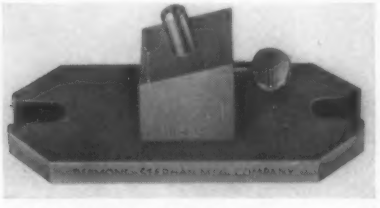
MAGNETIC DIAMOND HOLDER—*Anton Machine Works, 1226 Flushing Ave, Brooklyn, NY.* Eliminates necessity for mechanical means of turning diamond tool; magnetic laminated base can be used as angular grinding fixture.



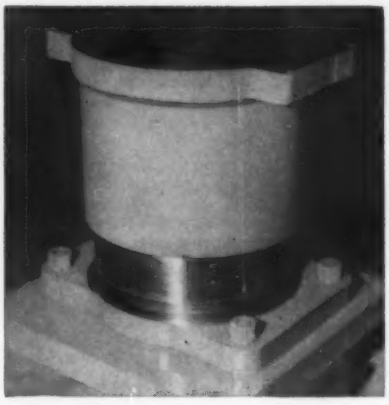
TRUING COLLAR—*Queen City Carbide Tool Co, 2338 Gilbert Ave, Cincinnati, Ohio.* Slips on grinder spindle behind wheel, locating four cone-point socket screws against spindle shoulder to allow truing wheel within 0.0005 in.



GRINDING WHEEL ADAPTER—*The Wm Sopko & Son Co, 140 E 267th St, Cleveland 23.* Incorporates wheel-pulling accessory; employs hex head instead of slotted headspindle nut. 3 sizes for grinding wheels to 1⅛ in. thick.

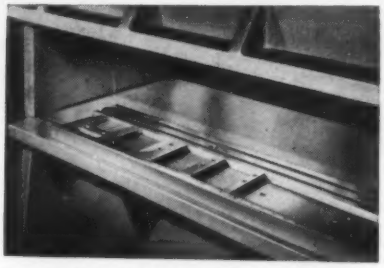


DIAMOND HOLDER — *Desmond-Stephan Mfg Co, Urbana, Ohio.* D-H No. 15 for surface grinders brings tip into contact with wheel at 15° angle. Steel base may be bolted or held to table by magnetic chuck.

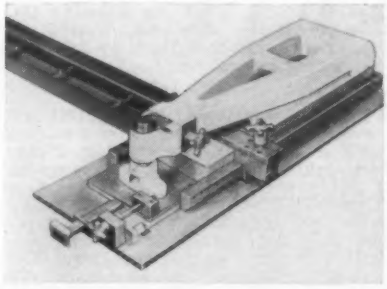


DIE CUSHION—*Dayton Rogers Mfg. Co, Minneapolis 7, Minn.* Cylinder dimensions are from 10 in. to 24 in. Pad is custom made to fit details of press bed opening. Capacities of single cylinder range from ½ to 45 tons.

HOLE-PUNCHING UNITS — *Wales Strippit Corp, 345 Payne Ave, North Tonawanda, NY.* Type JD; punch mild steel to ¼ in. thick and used in unlimited setups. Each punch and die assembly is independent and self-contained. Mounted in die sets and operate in press same as conventional dies.

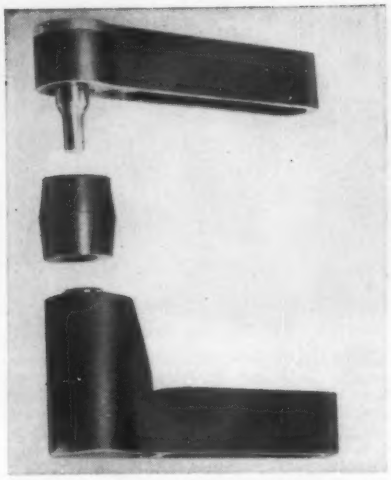


BED-RAIL ADAPTERS—*Wales-Strippit Corp, 345 Payne Ave, N Tonawanda, NY.* Use with Wales pressbrake bed-rails for mounting to layout pattern for independent hole-punching and notching units. Adapters located for straight-line or staggered hole-punching patterns.

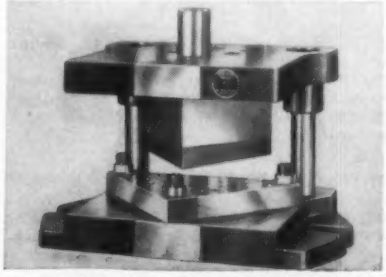


PIERCING TOOL—*Toolset Div, General Riveters, Inc, 777 Hertel Ave, Buffalo, NY.* Designed for low-run production, this single-hole piercing tool takes stock 3/32-in. to 2⅛-in. dia, to ⅛-in. thick. Throat 24 in. deep, with 36-in. combination back gage and stop bar, with rail-holes at 1-in. intervals.

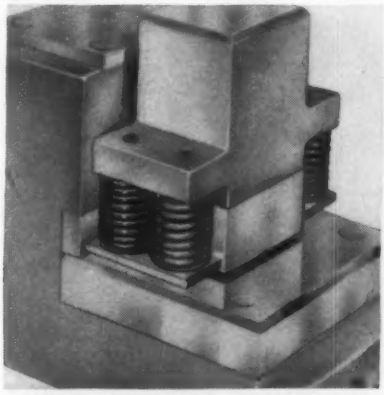
PNEUMATIC DIE CUSHION—*Dayton Rogers Mfg Co, Minneapolis 7, Minn.* Model CR is provided with hardened and ground pin pressure pad, custom-made to specific die and punch press requirements. Sizes available from 2- to 7-in. piston diameters.



PUNCH RETAINERS—*Allied Products Corp, Richard Brothers Punch Div, 1560 E Milwaukee Ave, Detroit 11.* Retainers for punch-shank diameters of ⅜, ⅝, ⅞, and 1 in., and die button OD's of ⅝, ⅞, 1¼, and 1¾ in.



V-NOTCH TOOL—*Vogel Tool & Die Corp, 1807 N 32nd Ave, Melrose Park, Ill.* V-notches angle iron to 90° bend. Tool, consisting of punch, die, and die set, will notch angles up to and including 3x3x⅜ in. and flat stock of ⅜ in. thickness.



NOTCHING UNITS — *Toolset Div, General Riveters, Inc, 777 Hertel Ave, Buffalo 7, NY.* Self-contained permanently aligned punches and dies which eliminate adjustments and attachments to upper ram. Lifter springs, punch and die, are contained in a single holder. Notching units, open or confined, have shut height of 6 5/16 in. and die height of 2 19/32 in.

PRESS UNIT—*Swanson Tool and Machine Products, Inc, Erie, Pa.* Eliminates need for diesets by providing means of mounting punches and dies of any shape in register blocks that are automatically and accurately aligned.

AIRFEEDRILL — *Keller Tool Co, Grand Haven, Mich.* Series 92A is automatic, has sensing device to shift to power feed when drill touches work, will skip-drill and peck drill (retract to clear chips). Speeds from 250 to 15,000 rpm, strokes from 2 to 7 in.

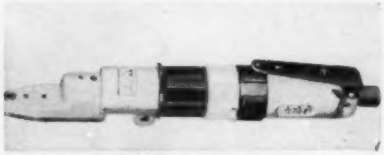
DRILL GUIDE—*The Roy Silver Corp, P O Box 147, Devon, Conn.* Guide-A-Drill can be attached to housing of any portable electric or pneumatic drill for precision work. Results come within 0.0005 in. by test.

HANDGRINDER — *The Dumore Co, 1300 Seventeenth St, Racine, Wis.* Series 35 uses ¼-hp motor to deliver speeds to 35,000 rpm. It can be used with tungsten carbide mills, highspeed cutters, mounted wheels and points, and abrasive bands.

HANDGRINDER—*Dumore Precision Tools, The Dumore Co, 1300 Seventeenth St, Racine, Wis.* Series 9 for cleaning casting and weld seams, spark testing steel. Chuck of ¼-in. capacity; ¼-hp universal motor develops 15,500 rpm.

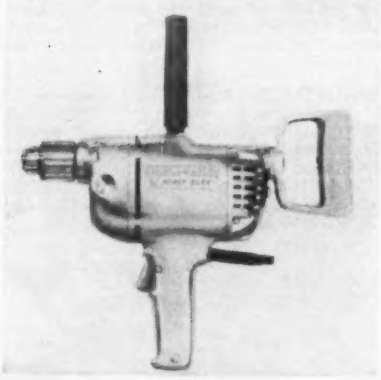
HANDGRINDER — *The Dumore Co, 1300 Seventeenth St, Racine, Wis.* Super-10 is powered by a 0.1-hp. ac-dc motor. Features speeds to 22,000 rpm and swings vitrified wheels up to one inch.

PENCIL GRINDER — *Air Equipment Corp, Grand Rapids, Mich.* Fingertip speed control. Weight is less than 6 oz. Collet guard prevents use of oversize point, and protects fingers. Minimum speed 100,000 rpm. Price, $42.50.

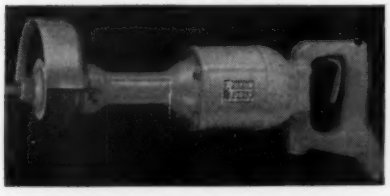


FLAT-ANGLE DRILL — *The Aro Equipment Corp, Bryan, Ohio.* Air-powered drill has head height of 43/64 in. and 5/16-in. spindle off-set. Bevel gears are located at rear of housing. Speeds of 1450, 2100, 2500, and 4000 rpm; threaded spindle accommodates threaded drill bits.

DRILL LEVEL—*M & J Specialty Co, Red Hook, Dutchess County, NY.* Consists of circular bubble level mounted on graduated bracket calibrated from 0 to 90°. Designed for drilling holes at any angle.



ELECTRIC DRILLS — *Porter-Cable Machine Co, 3¼ Exchange St, Syracuse 8, NY.* Model 516, ½-in. unit claimed to have 45% more twist power than nearest competitor. Weight is 10 lb, length 14¼ in. Motor draws 6 amp, rotates ½-in. gear chuck. Model 515, ¼-in. unit, draws 3 amp.



PORTABLE POWER GRINDERS — *Rotor Tool Co, 26300 Lakeland Blvd, Cleveland 23, Ohio.* 4-, 6- and 8-in. models have a one-piece spindle supported by three bearings with front bearing wider than usual. 4-in. grinder has speed of 6000 to 8500 rpm.

VERTICAL GRINDER — *The Rotor Tool Co, 26300 Lakeland Blvd, Cleveland 23.* Lightweight grinder handles cup wheels, cutoff wheels, sanding pads, and wire brushes, at speeds of 8000, 6000, and 4500 rpm.

OSCILLATOR—*Flexentrik Corp, 555 Fourth St, San Francisco, Calif.* Grinding, polishing, and sanding; when interposed between power unit and abrading head, acts as a free-floating coupler.

PENCIL DIE GRINDER—*Rotor Tool Co, 26300 Lakeland Blvd, Cleveland 23, Ohio.* 40,000 rpm spindle; ⅛- or ¼-in. collet. Three-blade air motor is controlled by sliding sleeve throttle.

AIR DRILL—*Aro Equipment Corp, Bryan, Ohio.* Light-duty ¼-in., and heavy-duty ⅜-in. air drills have ball or needle bearings throughout. Tool is 5½ in. long, 4⅞ in. high, 41/64-in. spindle offset, and has built-in automatic oiler. ⅜-in. hose required.

SHORT DRILL — *Stanley Electric Tools, New Britain, Conn.* Has ½-in. capacity in steel; construction of back spade handle allows it to be removed. Chuck speed of No. 123 with no load is 550, full load 330. No. 383 has ⅜-in. capacity steel; chuck speed of 800 with no load, 590 with full load.

ANGLE DRIVE—*Beaver Tool Co, 622 E Jericho Tpke, Huntington Sta, NY.* For small-dia extension drilling and reaming; Installed between extension rod and 79 drill extension chucks.

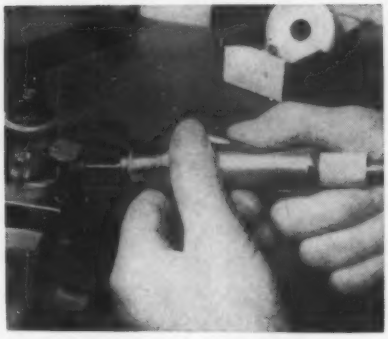
DRILL EXTENSION—*Ritmar Corp, 183 New York Ave, Huntington, NY.* Flexible 90° coupling, extension rod, handle. 5/16-in.—24 thread for chuck.

DRILL GUIDE — *High Standard Mfg Corp, Hamden, Conn.* Attaches to any portable drill to enable drilling or reaming at any angle.

SANDER GRINDER—*The Black & Decker Mfg Co, Towson 4, Md.* Heavy-duty 7-in. unit performs almost all types of surfacing operations; can be used with abrasive disks or accessories. No-load spindle speed of either 5200 or 6000 rpm.

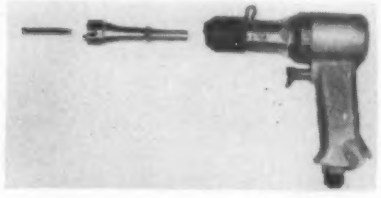
HAND-GRINDER — *Metal Removal Co, 1546 N Orleans, Chicago 10, Ill.* Flexible grind shaft controlled by hand dial to shift spindle through speeds from 700 to 50,000 rpm.

TOOLS and ACCESSORIES—portable tools



PENCIL GRINDER—*Rotor Tool Co, 26300 Lakeland Blvd, Cleveland 23, Ohio.* Model D-03 has free speed of 40,000 rpm. Collet capacity is ⅛ or ¼ in.; weight is 13 oz, length 5¾ in.

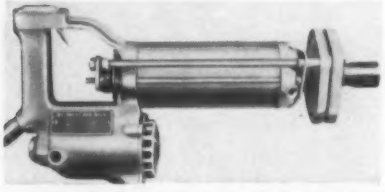
VIBRATOR SANDER — *Weller Electric Corp, 808 Packer St, Easton, Pa.* Model 700 has 25-sq-in. sanding area. Low design permits use in restricted places. Has 60-cycle motor and vibrates at 14,000 spm.



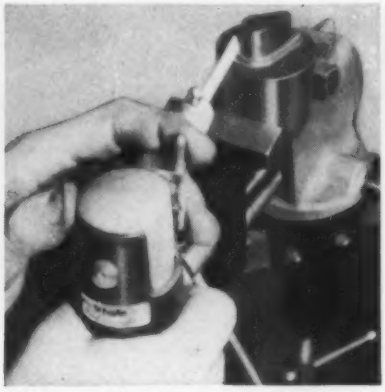
POWER TOOL—*Elastic Stop Nut Corp of America, Union, NJ.* Standard pneumatic aircraft riveting hammers, AVC-10, 11, 12, and 13 can be equipped for driving rollpins with special driving head.

IMPACT HAMMER—*Mead Specialties Co, Dept AT-4, 4114 No Knox Ave, Chicago 41, Ill.* Formerly spring tension on trigger mechanism released piston—now is accomplished by air pressure. Force of blow is increased. Adjustment of force of blow can be made while hammer is in action.

AIR TURBINE HAND TOOL—*Newage International, Inc, 235 E 42d St, New York 17, NY.* Lorantco grinder and miller comes in three sizes operating at speeds of 85,000, 75,000, and 55,000 rpm, provides wide range of spindle speeds. Internal and external and thread grinding can be performed. Designed for operation on air pressure from 60 to 100 psi.

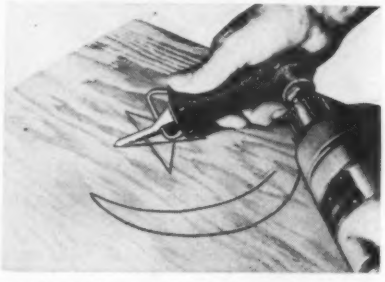


ELECTROMAGNETIC HAMMER DRILL—*The Syntron Co, 311 Lexington Ave, Homer City, Pa.* Drilling capacity of 1½-in. diameter; combines power of Syntron hammers with automatic rotation of spiral-fluted, carbide-tipped drill bit. The 3600 spm of the hammer piston rotate the bit.



DIE PROFILER—*Nord International Corp, 449-5 Central Ave, Orange, NJ.* Clamp positioned by thumb-screw permits hone of Di-Profiler to be rocked or rotated to conform with contour of die. Stroke of from 0 to ¼ in. can be operated from 0 to 15,000 spm by foot control.

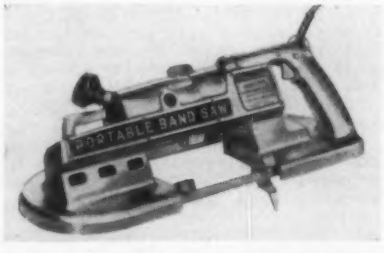
PROFILER—*Engis Equipment Co, 431 S Dearborn St, Chicago 5, Ill.* Model FNC Di-Profiler used with flexible drive and without intermediary sleeve coupling. Reciprocating hand machine for cutting, roughing, and finishing dies, tools, and molds. Speed adjustable from 0 to 100 strokes per second.



ANGLE SAW—*Price & Rutzebeck, P O Box 30, Hayward, Calif.* Less than 7 in. long; cuts iron pipe and other materials. Operates on ¼-in. drills at speed from 1800 to 3500 rpm.

ANGLE SAW—*Price & Rutzebeck Co, Box 30, Hayward, Calif.* Standard ¼-in. electrical drills geared to any speed from 1800 to 3500 rpm will mount a 1½-lb metal saw with either bayonet or tapered blades.

PORTABLE HACKSAW — *Lipe-Rollway Co, Emerson Ave, Syracuse, NY.* Handles stock to 3 in. thick, of metal, plastic, or fiber, at any angle from 45° to 90°. With work vise clamped to stanchion, Hand-I-Hack is self supporting, cuts to 0.010 in. accuracy.



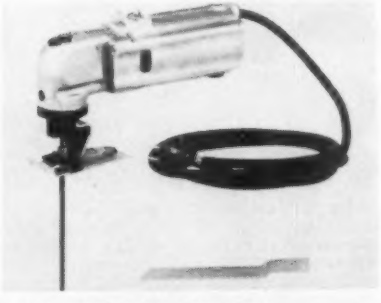
BANDSAW—*Porter-Cable Machine Co, Syracuse, NY.* Weighs 16 lb, has capacity up to 3¼ x 4¼ in. Band speed is 240 sfpm under load.

GRINDER-MILLER — *Precise Products Corp, 1328-30 Clark St, Racine, Wis.* Super 30 will develop 45,000 rpm and 1/5 hp. Uses tungsten carbide midget mills for die finishing. Where mounted on lathe or milling machine, does micro-milling to tolerances of 0.0001 in.

DISK SANDERS—*The Skil Corp, Chicago 11, Ill.* Model 851, standard-duty and 852, heavy-duty, use a 7-in. disk and have front handle location to take weight off operator's hands. Spindle diameter is ⅝ in.; motor is universal. No-load speed is 4500 rpm.

AIR HAMMER—*Burgess Thomas Co, Dept 3, Box 287, Bloomfield, NJ.* Measures 9¾ in. in length, has 1⅝-in. barrel diameter. It operates when pressed into contact with work and stops when withdrawn—pressures from 30 to 100 lb.

AIR-HAMMER KITS—*Salsbury Corp, 1161 E Florence Ave, Los Angeles, Calif.* 36-oz hammer may be operated in straight line or at 90°; five tools for scaling, peening, drilling, metal cutting, smoothing, riveting, rivet busting, and weld breaking.

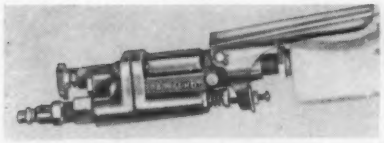


CONVERTIBLE NIBBLER—*Fenway Machine Co, 263 N 23rd St, Philadelphia 3.* Punch-and-die action cuts metals to 14 gage; converts to production file or saw, for any metal or wood surface, curved or flat. As nibbler, tool follows scribed line and works to minimum radius of ⅞ in.

QUICK-CHANGE HANDPIECE — *Franklin Balmar Corp, N A Strand Div, Woodberry, Baltimore 11, Md.* Eliminates need for tools in changing working attachments to end of flexible-shaft equipment. Device is fitted with a springlock retaining button.

AUTOMATIC COUPLER—*Foster Mfg Co, 2830 Gravois, St. Louis 18, Mo.* Fostermatic, is for air reciprocating tools. Half-moon dogs, offering long bands of gripping contact, lock at 45° and are positioned by a floating steel carrier.

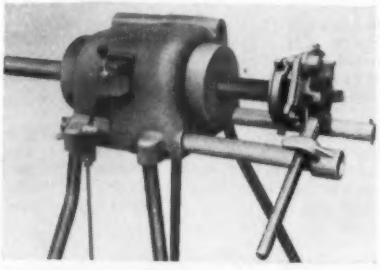
portable tools, hand tools—TOOLS and ACCESSORIES



RIVET TIMER—*New Era Specialties Co, Benton Harbor, Mich.* Enables operator to predetermine precise cycle of hammer blows his rivet gun will deliver, eliminating overdriven and underdriven rivets.

INSERT TOOL—*Heli-Coil Corp, Danbury, Conn.* Tools powered by air and electricity for insertion of wire screw-thread inserts.

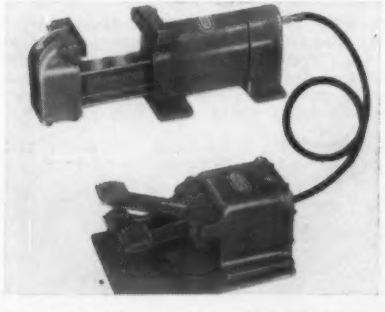
MULTIPLE NUT SETTER — *Keller Tool Co, Grand Haven, Mich.* Will set from 2 to 5 nuts simultaneously, each to different torque. Four motor units cover the range from 20 to 120 ft-lb. Offset spindles make it possible to set closely spaced nuts.



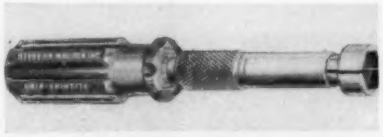
POWER DRIVE—*Gaines-Collins, Quijada Tool Div, 5474 Alhambra Ave, Los Angeles 32, Calif.* Thred-O-Matic cuts bolts from ⅜ to 1¼ in., threads pipe from ¼ to 2 in. Automatic chucking and unchucking.

BALANCER — *Aro Equipment Corp, Bryan, Ohio.* Model 7472 supports portable tools up to 5 lb, weighs 2 lb, has all adjustments on outside; 5-ft cable sheathed with nylon.

STUD-DRIVER—*Titan Tool Co, Main St, Fairview (Erie County), Penna.* Takes studs from ¼ to 3 in. dia, with female driving squares from ½ to 1½ in.



HYDRAULIC VISE AND PRESS—*Railcens, 120 N Wisner St, Jackson, Mich.* Foot pedals control vise which has removable jaw plates and divided front head. Suitable for punching, broaching, and removing gears and pulleys. Pump supplies 5000 psi. Jaw opening is 5 in.; depth of throat, 3 in.



WRENCH—*Stevens Walden, Inc, 460 Shrewsbury St, Worcester 4, Mass.* Machine taper lock grips nut or bolt as it is driven. Made in 12 sizes from 3/16 to 11/16 in.

HAND TOOL—*Tip Wrench Div, Smith Heat Treating Co, 5865 Wilmington Ave, Los Angeles 1, Calif.* Tip Wrench, designed to hold nuts, bolts, and screws, and tighten or loosen them in hard-to-get-at places, is an adjustable-socket pocket wrench.

OPEN-END WRENCHES — *Ampco Metal, Inc, 1745 S 38th St, Milwaukee 46, Wis.* Forged to steel tool specifications; said to have 10% less weight, 30% increase in strength.

TORQUE WRENCH—*Reasor Mfg Co, St Charles, Ill.* Four clockwise and counter-clockwise models are available for high-speed and speed operations in close quarters.

NUT-WRENCH—*Temco Aircraft Corp, PO Box 6191, Dallas, Texas.* For Tinnerman nuts, tightening templet setups. Both are 4½ in. long; can be maneuvered between connecting rods which normally are 5 in. apart.

HAND TOOLS—*Ampco Safety Tool Div, Ampco Metal, Inc, 1745 S 38th St, Milwaukee 46, Wis.* Numerous conical impressions on handle cause vacuum as palm of hand makes contact. The slipping problem is minimized; prevents excessive perspiration and forming of blisters.

SHOP HAMMER — *Univertical Machine Co, 4841 Meyers Rd, Detroit 27.* Safe-T Hammers have heads of tough, soft copper alloy, which will flatten but not fracture, molded on lightweight tubular steel handle.

PLASTIC HAMMERS—*Hunter Tool Co, 6608 South Gretna Ave, Whittier, Calif.* 42 sizes and shapes from 2-oz to 2-lb head, in straight peen, cross peen, ball peen; cellulose faces.

PLASTIC-FACE MALLETS — *New Plastic Corp, 1043 N Orange Drive, Los Angeles, Calif.* Four hardnesses; head resists flaking and mushrooming.

HAND TOOL LINE — *Utica Drop Forge & Tool Corp, Utica 4, NY.* Bit tools such as countersinks, nail sets, star drills, cold chisels, punches, and screw drivers are in a new line that also includes a cam-action high-leverage cutting plier and a compound-action diagonal cutting plier.

SCREWDRIVERS — *Blackhawk Mfg Co, Milwaukee 46, Wis.* Round, square, clutch, Phillips, screw-holding, and radio blades. Tempered chrome-vanadium steel.

HAMMER-HEAD CAP—*Lempco Automotive Inc, Cleveland 27.* Nylon, fits all standard ball peen and claw hammers.

WRENCHES—*Dayton Rogers Mfg Co, Minneapolis 7.* Custom-made, die-cut wrenches are produced by stamping and may be up to 20 in. long. Can be made from any material and heat treated to specifications.

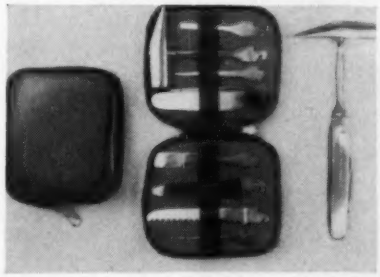
TORQUE WRENCH—*Frontier Industries, Manzel Div, 315 Babcock St, Buffalo, NY.* Capacity from 0 to 1000 ft-lb, for accurately tightening nuts to any predetermined stress. Dial is reset by turning center knob.

LOCKING WRENCH — *Utica Drop Forge & Tool Corp, Utica 4, NY.* Jaws can be locked at any setting. In addition, it acts as vise-wrench exerting 100-lb grip. Available in 8-, 10-, and 12-in. sizes.

TORQUE WRENCH—*P A Sturtevant Co, Addison, Ill.* F80-I-G, 0 to 80 in.-gram range is reported lowest capacity instrument of type. May be handled as ordinary small tool.

WRENCHES—*J H Williams & Co, 400 Vulcan St, Buffalo 7, NY.* Open end-box; slimmer heads, longer and narrower handles. Sizes from ¼ in. to 1⅝ in.

SCREWDRIVER — *Airdraulics Engrg Sales Co, Allendale, NJ.* Model SD6 Trutorq may be preset at any torque between zero and 6 in.-lb; accuracy may be held within 8 in.-oz. Accommodates a standard blade, hex bits, Phillips bits, a 1-¼-in. square drive, or special blades.



TOOL KIT—*Abbeon Supply Co, 159-27 Jamaica Ave, Jamaica 32, NY.* Miniature kit contains 8 tools—hammer, wood chisel, saw, file, drill, punch, screwdriver, and jack-knife within snap-on handle.

DRIVE PUNCHES—*New Plastic Corp, 1026 N Sycamore St, Hollywood 38, Calif.* Non-marring soft-faced tools equipped with Nuplaflex tips fastened in chrome steel tipholder. Five sizes, ¾ to 1½ in.

CARBIDE HAND FILE—*Severance Tool Industries, 726 Iowa St, Saginaw, Mich.* Can be reground many times for longer life. Available in coarse, medium, and fine cut; carbide cutting area is ¾ x 6 in.

HAND FILES—*Boice-Crane Co, 935 Central Ave, Toledo 6, Ohio.* Angular joint with smooth skew cuts without bump or chatter when laps pass work zone.

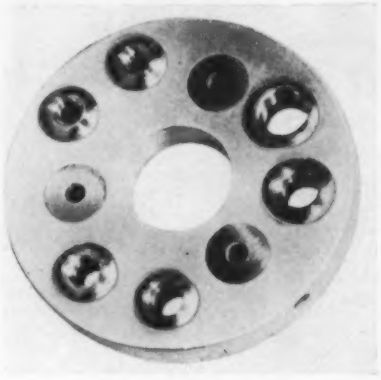
PLIERS—*Ampco Metal, Inc, 1745 S 38th St, Milwaukee 46, Wis.* Spark-, corrosion-, and acid-resistant. Non-magnetic, bronze. Long-nose style.

CUTTING PLIERS—*Utica Drop Forge & Tool Corp, Utica 4, NY.* No. 441, 5½-in. compound-leverage action, has handles fitted with spring which opens jaws automatically.

CUTTING PLIERS—*Utica Drop Forge & Tool Corp, Utica 4, NY.* Cam-action, high-leverage tool, 9 in. long, cuts up to ⅛-in. hardened steel drill rod.

THREAD-REPAIR KIT — *Heli-Coil Corp, 1476 Shelter Rock Lane, Danbury, Conn.* 25 inserts in common sizes, taps, and hand tools are included in a wooden box with printed directions.

THREAD-REPAIR KITS — *Heli-Coil Corp, Danbury, Conn.* The 34CS kit has inserts and tools in 4 sizes; wider range kit contains 11 sizes. Automotive thread repair kit contains a range of 5 sizes in either NC or NF series.



TAP GUIDE—*J R Reinertson & Co, 4744 W Lake St, Chicago 44.* Jerico guide for hand taps keeps them at right angles to work. Bushings accommodate ¼, 5/16, ⅜, 7/16, ½, or ⅝-in. taps. Guide holds to metal surfaces by built-in Alnico magnets.

HACKSAW ASSORTMENT — *Henry Disston & Sons, Inc, Tacony, Philadelphia 35, Penna.* 100 12-in. blades of various numbers of teeth per in.

HAND TOOLS—*The Milwaukee File Co, Milwaukee 4, Wis.* Sanders with cushion action; 3-way set file; hand file for level operation.

SCREWDRIVERS — *Louis Levin & Son, Inc, 3610 S Broadway, Los Angeles 7, Calif.* For fine instrument work, in nine blade sizes: 0.016, 0.020, 0.026, 0.030, 0.035, 0.041, 0.055, 0.070, 0.94 in. Blades are reversible.

TOOLS—*Bonney Forge & Tool Works, Allentown Pa.* Hacksaw for tight spots; wobble drive extension in 3-, 6-, and 12-in. lengths. Nut starters hold hexagon nuts.

CUTTERS — *Utica Drop Forge Tool Corp, Utica, NY.* Pocket armor tools cut BX and BXL No. 12 and 14 2/3 without danger to insulation.

UNIVERSAL PULLERS—*Blackhawk Mfg Co, Milwaukee 46, Wis.* Line of 127 pullers and pulling attachments to fill all maintenance requirements.

IMPACT SOCKETS—*Blackhawk Mfg Co, Milwaukee 46, Wis.* ½ and ⅝-in. drive wrenches, with hex openings in regular and long lengths, plus double square openings in regular lengths.

SETSCREW HEX KEY—*Vlier Engineering Inc, 4552 Beverly Blvd, Los Angeles 4, Calif.* Key Klip keeps hex keys firmly attached to socket-head setscrews.

KEYHOLE DRIFT SLOT — *Scully-Jones & Co, 1901 S Rockwell St, Chicago.* Round top portion serves as bushing for key, with rectangular slot for conventional drifts. Cam-shaped ejector tip rotates against top of tang, pushing tool out, avoiding axial stresses and hammer blows. Available with MT 1 to 5.

RETRIEVING TOOL—*Ullman Products Corp, 15 River St, Norwalk, Conn.* Uses Alnico-5 magnet attached to adjustable telescopic handle. Three sizes: 26 and 14 in., telescopic, and 8½ in.

MEASURING TAPE—*Evans & Co, Inc, 412 Trumbull St, Elizabeth, NJ.* ¾-in. wide; 10 ft long, one edge is graduated in 1/16ths, with first 6 in. in 1/32nds.

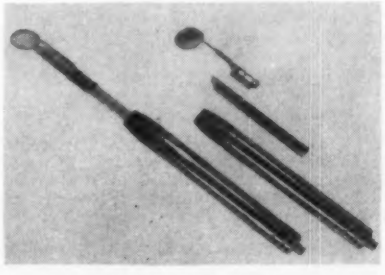
AIR GUN—*Saf-T-Blo, 196 S Kingsway Rd, Toronto 3, Canada.* Saf-T-Blo fits to any gun for cleaning blind drilled holes.

MAGNETIC HOLDERS AND SOCKETS—*Apex Machine and Tool Co, 1026 S Patterson Blvd, Dayton 2, Ohio.* Permanent magnet in holders and sockets hold screw or nut firmly in position. Bit holders have bit-retaining ring.

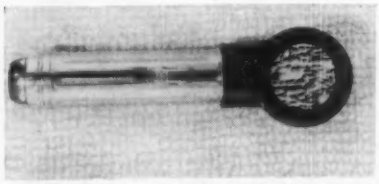
MAGNETIC RECOVERY TOOL—*Eriez Mfg Co, Erie, Pa.* 4½-in. instrument using permanent Alnico-5 magnet contained in 1-in. non-magnetic stainless steel tube.

CEMENTED CARBIDE INSERTS—*Carboloy Dept, General Electric Co, Detroit, Mich.* Brazed in power-driven socket heads of tool wrenches. Can be used on all types of power or hand tools.

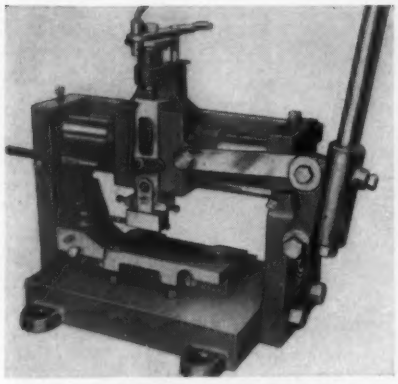
FLARING TOOL—*Tube & Hose Fittings Div, The Parker Appliance Co, 17325 Euclid Ave, Cleveland 12.* Vis-Flare for rapid formation of JIC and SAE 37° flares on copper, aluminum alloy, fully annealed steel, and stainless steel tubing.



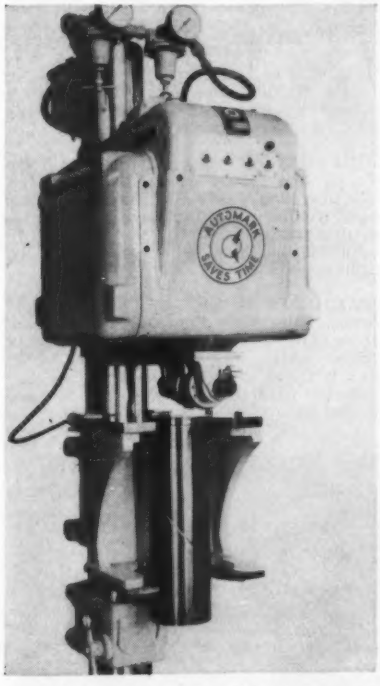
THREE-WAY PROBE — *Moore Mfg Co, Swedesboro, NJ.* Plastic probe tip beams light in straight line into small subassemblies. Small mirror clips onto probe for reflective view or to throw light behind parts.



MAGNIFIER—*Abbeon Supply Co, 179-25 Jamaica Ave, Jamaica 32, NY.* Flash-O-Lens combines 7-power magnifier with 2-battery light built into handle to illuminate area under inspection. Also available in 5-, 20-, and 40-power.



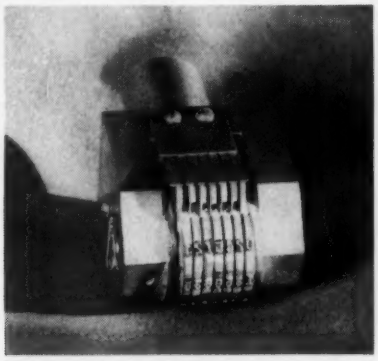
MARKING MACHINE — *Pryor Steel Stamps, 216 W Jackson Blvd, Chicago 6.* Bench model; marks variety of flat and cylindrical pieces.



AUTOMATIC ROLL MARKER—*Defiance Machine & Tool Co, 920 S Vandeventer Ave, St Louis 10, Mo.* Automark Model RMA-1 develops 7500 psi, is air-powered, electrically controlled. Makes up to 6000 impressions per hr. Table is 8x10 in.; distance from center of die slide to collar, 7 in. Max height from die slide to base, 48½ in.

AUTOMATIC MARKER—*New Method Steel Stamps, Inc, 147 Joseph Campau, Detroit 7, Mich.* Dual-operation screw-machine tool performs marking and cutting off on automatics. Model 700, eliminates 2 to 3-sec. dwell normally required for swing marking.

ROLL MARKER — *Noble & Westbrook Mfg Co, 17 Westbrook St, East Hartford, Conn.* Model 50P1 is pneumatically operated and electronically controlled, and operates semi-automatically. All controls are mounted in a separate floor panel fitted with plug-in connections.



MARKING HEAD — *Acme Marking Equipt Co, 8030 Lyndon, Detroit 38.* For use by hand or machine, will number serially from zero to 999,999 or will repeat.

MARKER — *Markem Machine Co, Keene 40, NH.* Model 56A prints tags, strip, at 80-100 impressions per min. Area of imprint, 2x2½ in. Takes rolls 2¼ in. wide, 3¾ in. in dia.

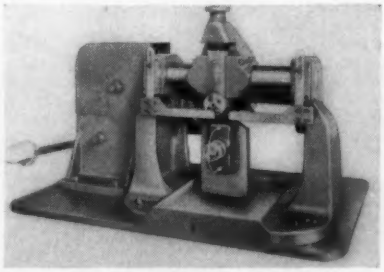
ELECTRO-CHEMICAL MARKING—*Crown Industrial Products Co, 915 Amsterdam St, Woodstock, Ill.* Crown E-Z Mark Etcher for production marking or individual identification. Consists of power unit and separate tray attachment; etches most metals, including aluminum.

STEEL STAMPS — *Acme Marking Equipment Co, 8030 Lyndon, Detroit 38, Mich.* For marking fractions on nameplates, components, and other metal parts. Available in fractions ranging from 1/32 to 31/32 in three sizes: ⅛-, 3/16-, and ¼-in.

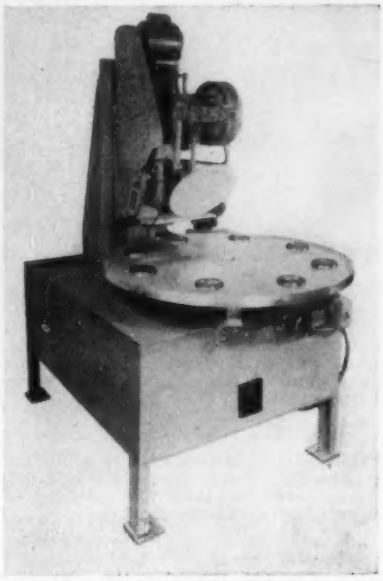
HOT STAMPING MACHINE — *The Acromark Co, 7-13 Morrell St, Elizabeth 4, NJ.* Bench-model adjustable lever-operated unit with automatic adjustable roll leaf feed, adjustable stroke, and ample working area for special stamping fixtures. Heat is provided by sealed tubular cartridge heating element.

STEEL FORGING STAMPS—*M E Cunningham Co, 1062 Chateau St, Pittsburgh 33, Penna.* Style FR has 45° rounded bevel on stamp, to prevent metal being caught in markings.

SCRIBER—*Wendt-Sonis Co, Hannibal, Mo.* Carbide-pointed; solid aluminum handle and protective point cover.

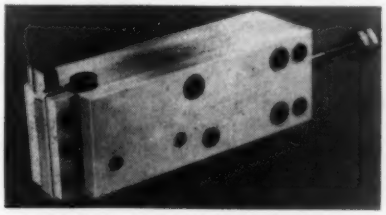


POWER MARKER—*Acromark Co, 7-13 Morrell St, Elizabeth, NJ.* Parts as thick as 9 in. may be marked on flat or curved surfaces by Model 99A. Length of stroke is 8 in.



MARKING MACHINE—*Markem Machine Co, Keene 42, NH.* Model 25AD; speed variable from 30 to 60 spm. Multiple-station dial feed is hand-fed or adaptable to special feed or automatic discharge mechanisms. Printing area measures 11 x 5 in.

AUTOMATIC MARKING — *Marken Machine Co, Keene 40, NH.* Printing on heavy cylindrical objects; will automatically receive, print, and eject objects being marked. Capacity ranges from 3 to 10 in. in diameter and 5 to 100 lb in weight.



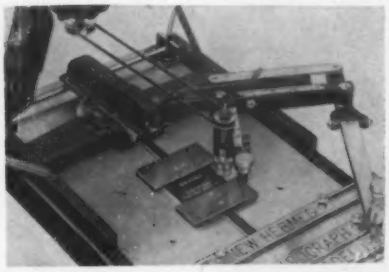
MARKER—*Silber Products, Inc, 132 Lafayette St, New York 13, NY.* Self-relieving action adjustable to 0.010 in. by setscrew and check nut prevents tool from gouging or scratching work on machine tools.

ELECTRIC TYPEWRITER—*Defiance Machine & Tool Co, 1920 S Vandeventer, St Louis, Mo.* Automark, for metal nameplates, has table feed mechanism with automatic shifting; heavy-duty table with precision control knob for accurate adjustment.

MARKER—*Mark-Tex Corp, Dept 83, 453 W 17th St, New York 11, NY.* Tech-Pen makes permanent markings on any surface. Common solvent removes.

TAPE PRINTER—*Kiwi Coders Corp, 3804 N Clark St, Chicago 13.* Marks creped or flat back masking tape and pressure sensitive cloth tape, feeding one imprint at a time or continuously.

ELECTRIC ETCHER—*Standard Electrical Products Co, 2240 E Third St, Dayton, Ohio.* Staco portable unit for permanent marking of iron, steel, and other alloys.



ENGRAVING MACHINE — *New Hermes Engraving Machine Corp, 13-19 University Place, New York 3, NY.* Portable chassis; for engraving panels, dials, nameplates, signs, and similar items, and is no larger than a typewriter.

INDELIBLE MARKER—*Dri-Flo, 642 E Ten-Mile Road, Hazel Park, Mich.* Col-R-Coder for indelible marking of paper, fiber, and plastic tags.

INK—*Organic Products Co, Box 428, Irving, Texas.* No. 400 for wet-surface marking is applied by rubber stamp from an ordinary pad to metals or other surfaces while in water, or immediately after withdrawal.

INK—*Speedry Products, Inc, 91-31 121st St, Richmond Hills 18, NY.* Magic Marker writes with felt nib, making lines of various widths and of six colors.

MARKING PEN — *Newage International, Inc, 235 E 42nd St, New York 17, NY.* Built-in magnetic vibrating system. Voltage is reduced to 2 to 7 v at tip.

PAINT CRAYON—*Joseph Dixon Crucible Co, Jersey City, NJ.* For permanently marking cold surfaces wet, dry, rough or oily, and waxy or resinous coatings, on wood, metal, plastics, and rubber.

MARKING CRAYON — *Joseph Dixon Crucible Co, Jersey City, NJ.* Made of natural soapstone, has been introduced for use on rough steel plates and cast iron. Marks will remain sharply etched under heat generated by acetylene torches.

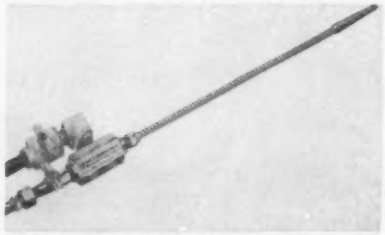
ENGRAVER—*H P Preis Engraving Machine Co, 16 Industrial Branch, Hillside, NJ.* Preis-Panto 3D-5 has spindle speeds of 5000, 7000, 9000, and 12,000 rpm. Furnished with 1725-rpm ball bearing motor, and worktable, clamps, copy holder, spindle, collet, belts, pulleys, cutters, grease gun and wrenches.

FOUR-FUNCTION TOOL — *Electro Arc Sales Co, 5270 Geddes Road, Ann Arbor, Mich.* Hand-etching tools, dies and parts, demagnetizing parts and ixtures, magnetizing small and medium size parts, and resistance soldering.

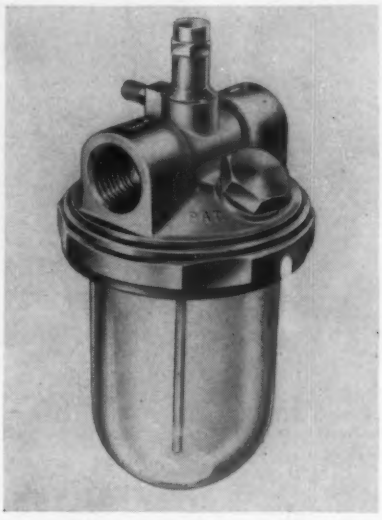
TAG PRINTER—*American Tag Co, Belleville 9, NJ.* Over 200 characters on eleven separate lines in a single impression at 1000 tags per hour.

PRINTER—*The Acromark Co, 8-13 Morell St, Elizabeth, NJ.* Model No. 507 applies colors to depressed or sunken design and lettering on metal plates. Air-powered; prints from 15 to 120 pieces per min.

AIR-TOOL LUBRICATOR—*C A Norgren Co, 3436 S Elati St, Englewood, Colo.* Micro-Fog lubricator has variable-vane venturi. 20 models, with pipe sizes of ¼ to 1 in., capacities ½ pt to 4½ gal., flow range from 5 to 250 cfpm at 80 psi.



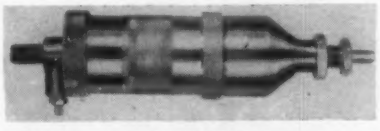
ATOM-LUBE SYSTEM—*The Henry G Thompson & Son Co, New Haven, Conn.* Air jet atomizes any cooling or lubricating liquid from water to heavy machine oils for variety of machining operations.



LUBRICATORS — *Generant Engineering Co, 260 S 20th St, Newark 3, NJ.* Oil mist is injected into compressed-air stream to lubricate air cylinders and devices by lubricators made in ¼-in., ⅜-in., and ½-in. pipe sizes.

LUBRICANT—*Original Bradford Soap Works Inc, West Warwick, RI.* Red Sawlube, for saws and metal-cutting tools, available in bar form. Min build-up minimizes possibilities of throwing tools off balance when operating at high speeds.

PRODUCTION SPRAYER — *Miracle Power Div, AP Parts Corp, Toledo, Ohio.* For pre-lubrication of moving engine parts, bug-bomb sprayer operates without compressor or other mechanical or electric power and is used to dispense dgf-123 pre-lubricant.



PRESSURE LUBRICATOR — *Bronze Bearings Inc, 410 North Ave, Cranford, NJ.* Automatic high-pressure-grease or heavy-oil Hi-Lo is operated through coil spring pressure controlled by moving piston with metering pin to maintain uniform flow.

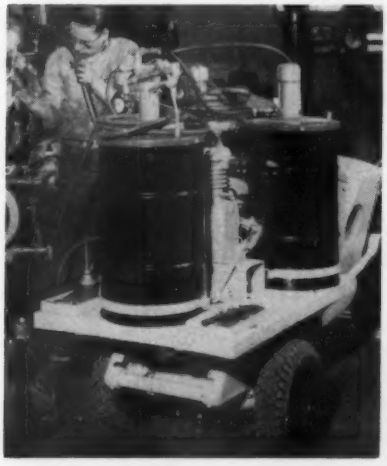
CONVEYOR LUBRICATOR — *J N Fauver Co, 51 W Hancock, Detroit 1, Mich. Injects grease or oil.* Model 702 lubricates one side, 704 both sides, of mono-rail conveyor.

LUBRICATING SYSTEM — *Bijur Lubricating Co, Rochelle Park, NJ.* Comprises elements of complete system—reservoir, filter, pump, and meter-units, yet measures 2¼ x 1⅜ x 1½ in. Reservoir holds 20cc.

SPRAY-LUBE SYSTEM—*C A Norgren Co, So Elati St, Englewood, Colo.* Spray can be applied to work area from any direction into as many points as necessary. Provides individual metering control at each mixing valve and character of spray can be controlled by adjustment of air-pressure regulator and liquid-pressure regulator.

MACHINING LUBRICANT — *Van Straaten Chemical Co, 546 W Washington Blvd, Chicago 2.* Van-trol 5641C, is said to have low ph factor and neutral odor.

LUBRICANT—*Tower Oil Co, Chicago, Ill.* For open gears, sprockets, chains, leaky gear boxes. Kotall is poured onto surface.



SERVICE STATION — *The Prime-Mover Co, Muscatine, Iowa.* Complete maintenance runs by mobile unit equipped with Alemite units for motor oils, gear lubricants, pressure-gun lubricants, air compressor, air tank, tool trays, surface hoses and pumps.

LUBRICANT VALVES — *Lincoln Engineering Co, Industrial Div, 5703-27 Natural Bridge Ave, St Louis 20.* Hydraulically operated to dispense predetermined quantities of lubricant. There is an adjusting screw at each end of measuring chamber.

AUTOMATIC MIST LUBRICATOR—*Lincoln Engineering Co, Industrial Div, 5703-27 Natural Bridge Ave, St Louis 20, Mo.* Controlled mist lube for open gears. Valve can be assembled to any lubricant injector in centralized system, adjacent to, or remote from, gears to be lubricated.

LUBRICATING STICK — *Destiny Products Co, 2970 W Grand Blvd, Detroit.* Hyperstik is 2¼ in. in dia and 8 in. long—is reported applicable to grinding, tapping, threading, drilling, pipe cutting, metal spinning, sawing, and sanding.

LUBE-OIL PACKAGE—*J N Fauver Co, 51 W Hancock, Detroit 1.* For jet engine test cells. Includes air-operated valves, 20-gpm Yale & Towne pump, Cuno filter, heat exchanger, load cell and precision indicators.

LUBRICANT—*The Alpha Corp, 179 Hamilton Ave, Greenwich, Conn.* Moly-Spray-Kote, applied to metal surfaces by spraying from self-pressurized aerosol container. Non-flammable, may be used on hot surfaces.

PENETRATING OIL—*Kano Laboratories, 1000 S Thompson Lane, Nashville 11, Tenn.* Pressurized Aerosol for loosening rusted bolts, cleaning off grease and oil.

BUTTON-HEAD COUPLER — *Rockwell Manufacturing Co, 400 N Lexington Ave, Pittsburgh 8, Penna.* For Rockwell high pressure lubrication systems; has positive shut-off device to prevent leakage from grease gun.

LUBRICANT — *Tri-State Petroleum Co, 81st & Eastwick Ave, Philadelphia 42.* T/S-21 for ball and roller bearings is claimed not to break down or bleed even at very high temp; can be pumped at below 0 F.

GREASE—*Tower Oil Co, 111 N Canal St, Chicago.* All-purpose "Grezall" has anti-oxidant said to greatly increase high-temp resistance, and prolong oxidation resistance.

OILER—*Plews Oiler Co, 701 S 7th St, Minneapolis, Minn.* Seamless spout; leakproof coupling for all oilers with interchangeable spouts.

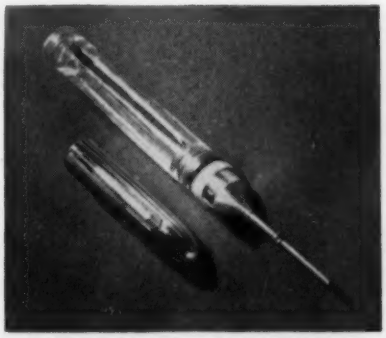
BEARING LUBRICATOR—*Acumeter Laboratories, Inc, 27 Mica Lane, Newton Lower Falls 62, Mass.* Consists of a series of stainless-steel metering pumps driven by a motor through a speed reducer. Each pump supplies one bearing and each can be set to produce the required flow. Two pressure switches are individually adjusted to high- and low-pressure limits for the line.

GREASE—*The Alpha Corp, 179 Hamilton Ave, Greenwich, Conn.* Molykote BR2 for highly loaded ball and roller bearings and heavily loaded sliding friction surfaces. Operating range is from —80 to 350 F.

PORTABLE GREASER—*Aro Equipment Co, Bryan, O.* 5-lb-capacity lubricating pump works by hand, is air-primed by pumping lever. Wt, 15 lb. Grease-level indicator, pressure boost.

PUMP OILER—*Eagle Manufacturing Co, 2523 Charles St, Wellsburg, W. Va.* 6-oz capacity; has asbestos-lined flexible steel cone-shaped spout for easy oiling.

OVEN CHAIN LUBRICATOR—*R G White Engineering Co, 1338 Atlantic Ave, Brooklyn 6, NY.* Designed to fit directly to standard 5-gal. can of lubricant; consists of pump, ¼-hp motor, 2-ft applicator, 9-ft hose, and slow-speed mechanical agitator.



OILER—*Lofthouse Co, Box 832, Binghamton, NY.* Leakproof refillable pen-size unit has visible oil supply and pocket clip.

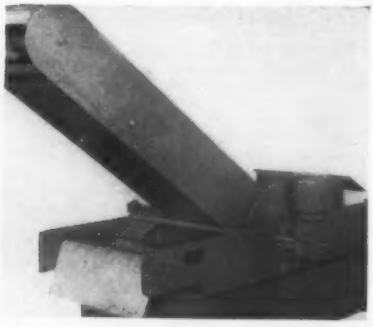
CUTTING OILS—*Sun Oil Co, Philadelphia 3, Penna.* Contain Petrofac, a petroleum-base wetting agent to overcome problems of animal and vegetable oils.

CUTTING COOLANT — *Pillsbury Chemicals, 6545 Georgia Ave, Detroit 11.* No. 609 for stamping, punching, deep-drawing, tapping, and lathe operations. Water-soluble product protects steel from rusting.

GRINDING COMPOUND—*F E Anderson Oil Co, Inc, Portland, Conn.* Lusol K-5, for cast-iron and titanium grinding, is a transparent, non-foaming solution. Good rust protection, freedom from color and sludge and rapid chip settling are claimed.

THREAD GRINDING COMPOUND—*Van Straaten Chemical Co, 546 W Washington Blvd, Chicago, Ill.* Vantrol 5299M, developed two years ago, is now being used in thread-grinding operations. The compound has reportedly cut operating temperature, given more pieces per tool grind, and less wear on diamonds.

DRAWING COMPOUND—*The Texas Co, 135 E 42nd St, New York 17, NY.* Cold-forming compound mixes with water at ratios from equal parts up to 1:15.



CONVEYOR FILTER—*Barnes Drill Co, 814 Chestnut St, Rockford, Ill.* Combination unit removes heavy material from coolant in conveyor section, then takes out fines at fabric screen. Clean coolant is recirculated to plant system.

COOLANT CLEANER — *Barnes Drill Co, 814 Chestnut St., Rockford, Ill.* Kleenall unit has flow channel surrounding rotating magnetic drum to remove ferrous metal particles and entrained abrasives. Coolant then flows to filtering area forming pool on supported fabric apron that removes remainder of abrasives and dirt. Four models with capacities from 15 to 60 gpm.

COOLANT FEED MANIFOLD—*Graymills Corp, 3705 N Lincoln Ave, Chicago 13.* For multiple drilling operations. Mounts on standard 4 or 8 drillheads—split ring design makes it unnecessary to remove drillhead for installation.

COOLANT — *Motch & Merryweather Machinery Co, Cutting Tool Mfg Div, 1250 E 222nd St, Cleveland 17.* Triple C for all wet grinding operations may be put directly into water in grinder where dissolving takes place in two minutes.

COOLANT SYSTEM—*Easy Industries, 162 N Clinton St, Chicago 6, Ill.* Provides 2 gpm at 5 ft working head and No 10 oil at reduced capacities.

AERATOR—*Melard Mfg Corp, 432 Austin Place, New York 55.* Mel-O-Flow connects directly to coolant line, mixes atmospheric air with coolant resulting in non-splash mixture which clings to work and tools. May be used on any machine tool, on any metal. Operating range, 5 to 60 psi.

COOLANT COOLER—*Webber Manufacturing Co, Inc, Dept 286, 2740 Madison Ave, Indianapolis 3, Ind.* For high production machining operations on hones, lappers, surface grinders and thread grinders. It is designed for normal installation in coolant line between pump and nozzle.

FILTERING SYSTEM — *US Hoffman Machinery Corp, Syracuse, NY.* Magna-Flomaster, 3-phase, clarifies mineral cutting oils or water-soluble coolants. 3 models with flow rates from 20 to 40 gpm.

IMMERSION COOLANT PUMPS—*Graymills Corp, 3705 North Lincoln Ave, Chicago 13, Illinois.* Line includes models from 1/25 to ½ hp. Available as pump and motor combinations only, or in over 182 combinations with tanks, in centrifugal and gear design.

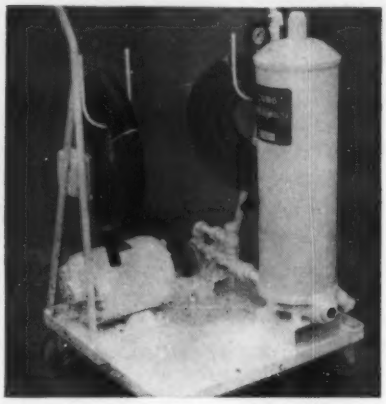
MIST COOLANT SYSTEM—*Air Conversion Research Corp, 4107 N Damen Ave, Chicago 18, Ill.* Lo-Jet Acro mist coolant system has been redesigned for more physical compactness, and a master panel control for precise and constant spray regulation has been incorporated.

COOLANT FEED RING—*Graymills Corp, 3705 North Lincoln Ave, Chicago 13, Ill.* Manifold for multiple drill heads designed to move up and down with spindle. Accommodates up to 16 outlets of varying lengths, each having its own flow control.

COOLANT CONCENTRATE — *Johnson's Wax, Racine, Wis.* TL-131 is claimed to have cooling power sufficient to reduce cutting temperatures 300 deg below conventional coolants.

VALVE—*Cleveland Industrial Tool Co, Inc, 1080 E 222nd St, Cleveland 17, Ohio.* Automatic hydraulic coolant valve turns coolant on and off diamond wheel dressing tool at each dressing cycle.

SPRAY-COOLANT—*Bar Products Co, 3703 Highcrest Rd, Rockford, Ill.* Spray-Kool system for dry grinding or polishing work, and drilling, milling, chamfering, or boring operations not requiring flood coolant, provides uniform jet spray to tools and work. Adaptable to any make of machine without special equipment.



PORTABLE FILTER — *Cuno Engineering Corp, Meriden, Conn.* With pump, motor, oil-resistant hose, gages, and filter. Filters such fluids as lube and hydraulic oils, coolants, and wide range of heavy and thin industrial fluids.

COOLANT PUMP — *Graymills Corp, 3705 N Lincoln Ave, Chicago 13, Ill.* H-6000 delivers 17 gpm at 12-ft head; handles liquids with wide range of viscosities, including abrasives.

COOLANT FILTER—*Industrial Filtration Co, Dept 286, Lebanon, Ind.* For low coolant flow, reported to offer saving in production time, more efficient machine operation, less downtime for tool correction and dressing for grinders. Continuous positive filtration removes abrasive solids from coolant as it comes from work.

COOLANT SYSTEM — *Viking Industries, Rockford, Ill.* Portable 1-gal. unit attaches to drillpress tables. Has full flow adjustment.

MAGNETIC SEPARATOR — *Dings Magnetic Separator Co, 4740 W Electric Ave, Milwaukee 46, Wis.* Permanent magnets pick up chips from coolant; used with most types of machinery.

FILTERING UNIT — *Industrial Filtration Co, Dept S-287, Lebanon, Ind.* For filtration of relatively small solids; permits continuous removal of chips, heavy, and relatively fine solids to 0.004-in. screening.

COOLANT FILTER—*Barnes Drill Co, 814 Chestnut St, Rockford, Ill.* Magnetic and fabric filter passes coolant around magnetic drum, then scrapes particles off. Coolant filters through membrane which holds all particles over pre-determined micron size.

SAFETY COOLANT—*Dynamic Industrial Products Inc, Danbury, Conn.* Permits stepped-up speeds and feeds, as well as heavier cuts. A non-flammable water solution, Dypral contains no oil.

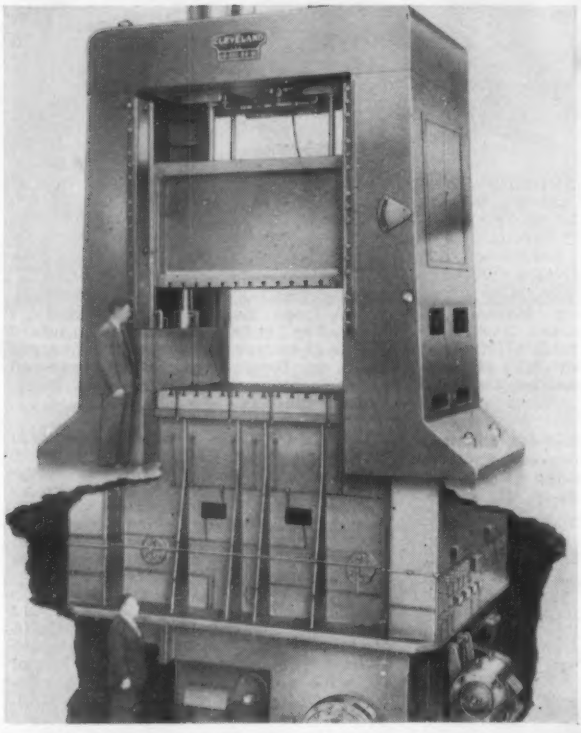
American Machinist

1955

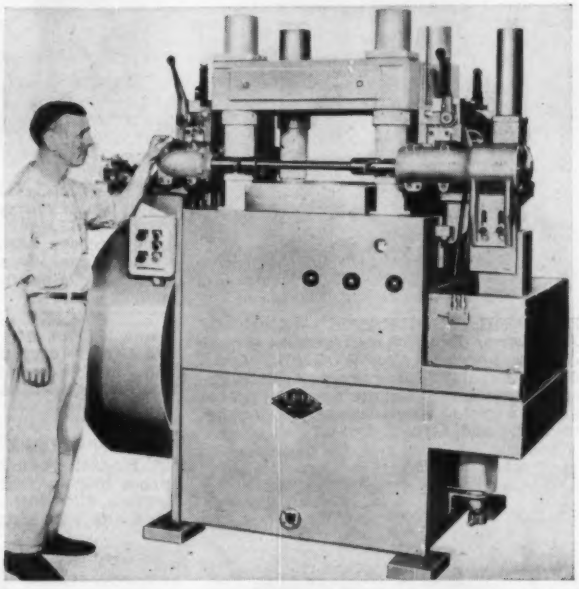
PRODUCTION PREVIEW

FORMING, FORGING, CASTING

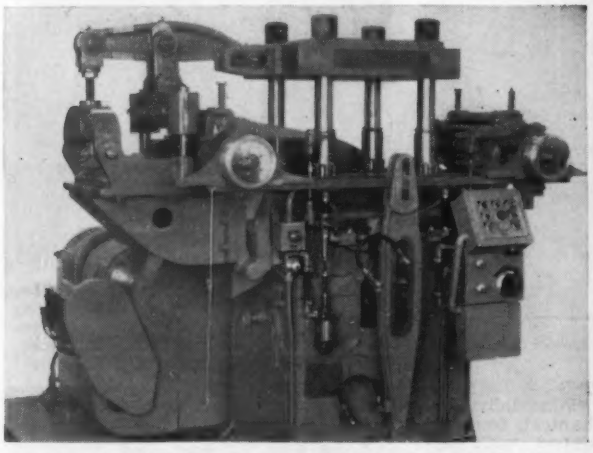
summarized from descriptions published during 1954



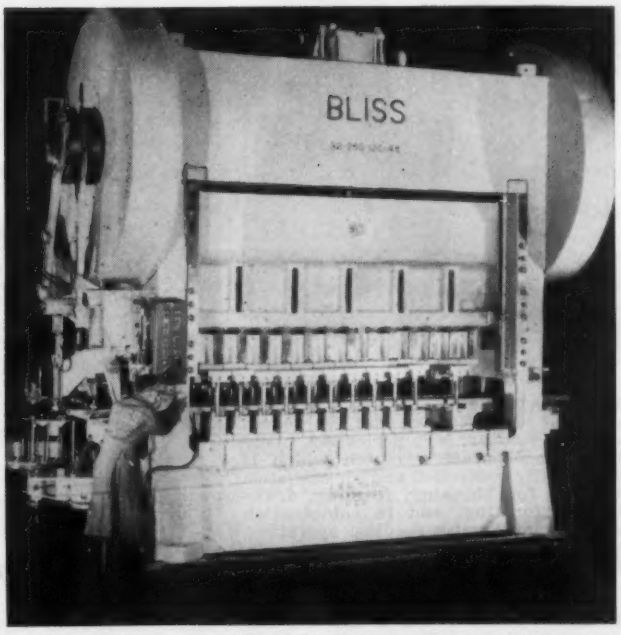
UNDERDRIVE PRESS—*Cleveland Punch & Shear Wks Co, Cleveland 14.* Double-geared, twin-drive Cleveland U4-450-ton; air-counterbalance for slide, air brake on flywheel. Has dynamic clutch and pneumatic cushions; 20-in. stroke, slide and bed area of 60 x 80 in.



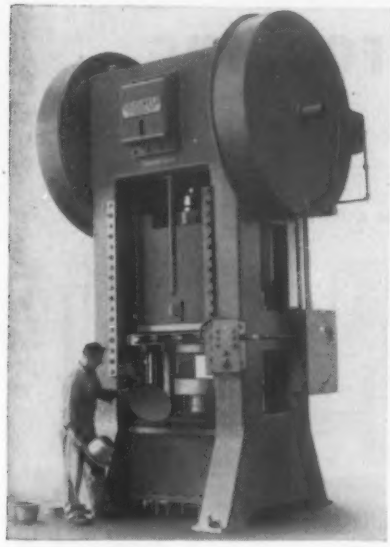
PRESS—*Alpha Press and Machine, Inc, 9281 Freeland Ave, Detroit 28, Mich.* 75-ton; stroke of 4 in.; speed of 1-in. stroke is 300 per min; 2-in. stroke, 200 per min. By means of air-clutch and brake combination, strokes can be inched, single, or continuous.



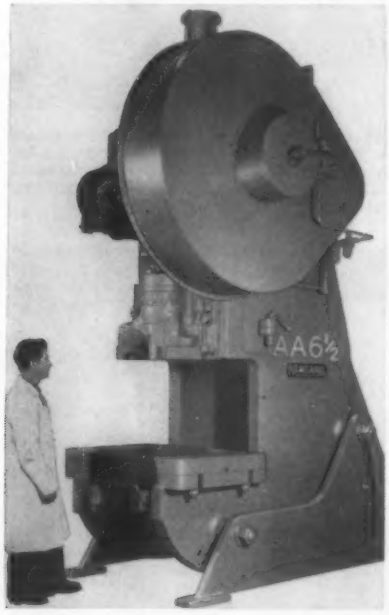
DIEING MACHINE—*Henry & Wright, Hartford 1, Conn.* 60-ton capacity unit is equipped with multiple-station progressive die for production of drawn stampings. Equipment includes friction clutch of pneumatically actuated type with pushbutton control to provide single stroke nonrepeat operation continuous running, inching or jogging, and normal stopping.



TRANSFER PRESS—*E W Bliss Co, Canton, Ohio.* Press features special stacking and feeding device, and electric controls. Feed and transfer mechanism accommodates similar-type stampings requiring successive or progressive operations. Straight-side double-crank design, 120x48-in. bed, single-geared with twin drive from 50-hp motor; 13 stations, rated at 250 tons.

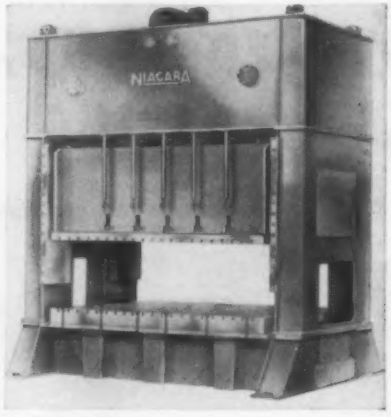


DEEP-DRAW PRESSES — *Steelweld Machinery Div, The Cleveland Crane & Engineering Co, Wickliffe, Ohio.* Newly developed linkage permits high-speed movement during non-productive part of cycle. Sizes from 160 tons up, in 1-, 2- and 4-point types.



INCLINABLE PRESS—*Niagara Machine & Tool Works, 683 Northland Ave, Buffalo 11, NY.* Series AA open-back; incorporate a clutch which is electrically controlled and air-actuated. Utilized for blanking, forming, drawing, perforating, and in combination die and automatic feeding operating, presses may be fed from either side, front, or back.

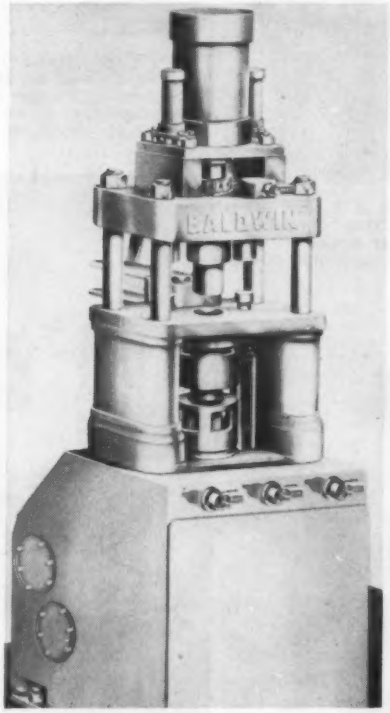
PRESS—*Walsh Press & Die Co, Div American Gage & Machine Co, 4709 W Kenzie St, Chicago 44, Ill.* Model 20X is a die-tryout, shearing-in, and production press with die-forged crankshafts and ball screws, bronze bearings, and ground or hand-scraped moving parts.



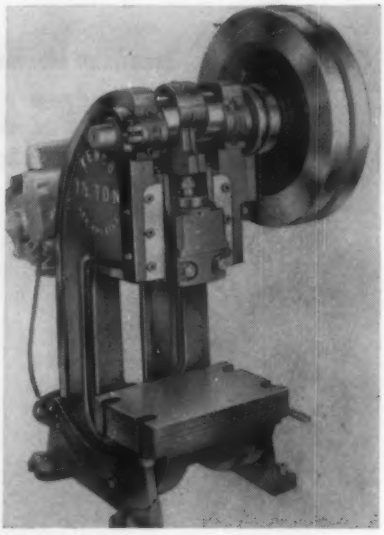
ECCENTRIC-GEARED PRESSES — *Niagara Machine & Tool Works, 683 Northland Ave, Buffalo 11.* Straight-side presses handle 100 through 1000-ton ranges. Drawing, punching, and blanking. Pneumatic friction clutch.

PRESS LINE—*Niagara Machine & Tool Works, 683 Northland Ave, Buffalo 11.* Driving mechanism of straight side double crank series SC-2 is completely concealed. Capacities from 50 to 300 tons.

BENCH PRESS—*Service Co, Chicago 20.* Rouselle bench or floor-stand punch press has six bed positions at 1-in. intervals allowing up to 10-in. die space. Bed has 4-in. slug hole.



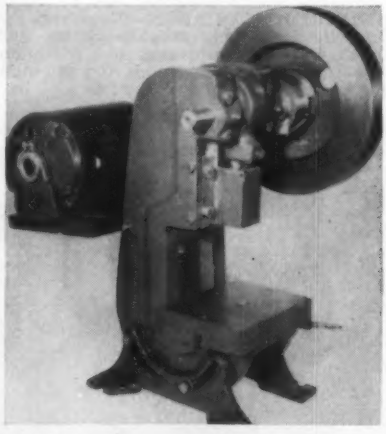
COMPACTING PRESS — *Baldwin-Lima-Hamilton Corp, Philadelphia, Pa.* Model L, 50-ton; mechanical, four-column crank-type equipped with flywheel, pneumatic clutch and brake, and driven by 10-hp totally enclosed motor through variable-speed drive. The press can be cycled as follows: continuous run; semi-continuous run with dwell stop at any predetermined point, dwell, start automatically.



OBI PRESS—*Kenco Mfg Co, 5211 Telegraph Road, Los Angeles 22.* Model 7 is rated at 7½ tons, has 1½-in. standard stroke (3-in. available), and shut height of 7¾ in. Single trip can be converted to continuous by moving one lever. Bolster plate is 7½ x 11 x 1 in.

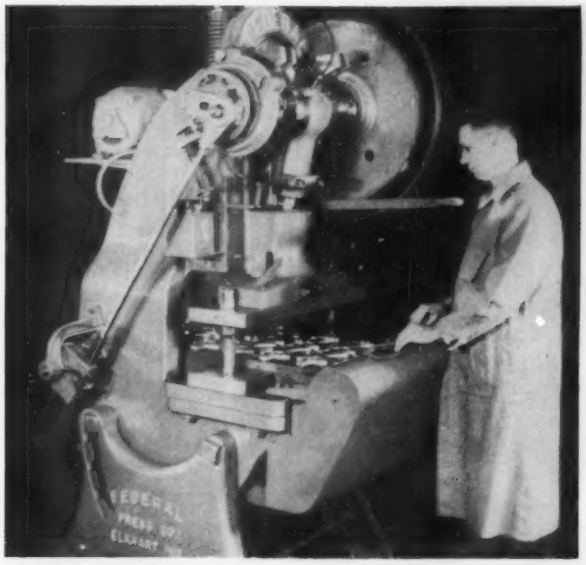
MIDGET PRESS—*Kenco Mfg Co, 5211 Telegraph Road, Los Angeles 22, Calif.* Rated at 1½ tons for continuous heavy-duty work, and offers ¾-in. stroke as standard with 1 in. optional. Construction is of openback, inclinable type. Features of the machine include: clutch mechanism self-contained, ram and ram guides of 90° V-type.

RIBBED PRESS—*Kenco Mfg Co, 5211 Telegraph Road, Los Angeles 22, Calif.* Model 5R has 5-ton capacity; 90 to 285 spm; 130-lb 18-in.-dia flywheel. Model 4R with 4-ton capacity has 55-lb flywheel. Optional strokes of 1 or 1¼ in.

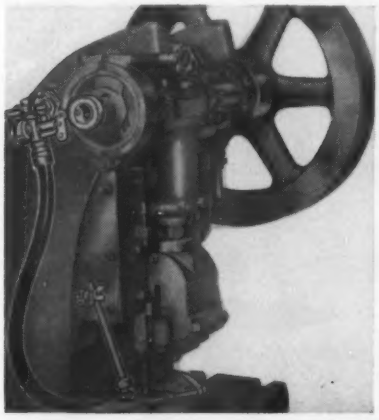


TWO-TON PRESS—*Sales Service Machine Tool Co, 2363 University Ave, St Paul, Minn.* Model No. 00 replaces manual punching and assembling jobs. Standard stroke is ¾ in. Flywheel speed is 270 rpm.

INCLINABLE PUNCH PRESSES — *Johnson Machine & Press Corp, 620 W Indiana Ave, Elkhart, Ind.* Model 33 has 27-ton capacity with 2½-in. stroke and 6-in. stroke. Model 44 has stroke of 4 in. with flywheel model rated at 105 spm, back-geared model 46 spm. Model 55 (65-ton capacity) has standard 4 in. stroke—flywheel type delivers 100 spm; bullgear type 45 spm.



HIGH-SPEED PRESS—*Federal Press Co, Elkhart, Ind.* Produces 7200 pieces per hr. OBI Model 44, with wide ram and bolster plate, uses wide chain conveyor with 19 pairs of stations.



AIR BLAST VALVES—*F J Littell Machine Co, Air Div, 4105 Ravenswood Ave, Chicago 40.* Delayed action valves blow after cam has passed over valve roller, suitable for use on compound blanking dies.

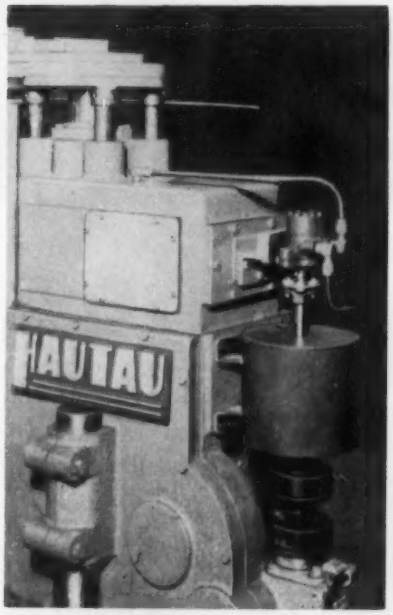
BENCH PUNCH PRESS—*Diamond Machine Tool Co, 5111 Coffman-Pico Rd, Pico, California.* 9-ton capacity; meets stricter safety codes. Shut-die height is 7 in.; standard stroke is 1½ to 3 in. Made in plain open-belt with 150 sfpm and backgeared to 100 sfpm.

ARBOR PRESS—*Glenwood Machinery Associates Inc, 85 Chestnut St, Newark 5, NJ.* Equipped with adjustable pressure-release clutch, designed for manual assembly of small parts. Ram pressure ranges from zero to 100 lb. Other features include adjustable head and ram take-up gibs.

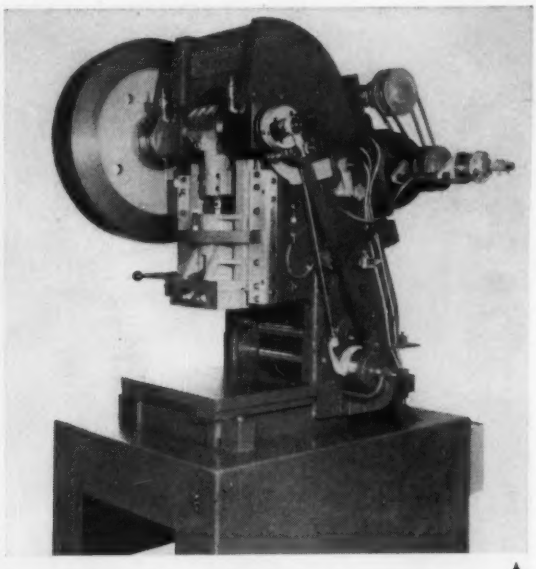
QUICK-CHANGE PUNCH PRESS — *Rotex Punch Co, Inc, 2350 Alvarado, San Leandro, Calif.* An 18-station rotary turret punch press that punches any shape hole. Punch-and-die set is brought into position instantly by a rapid, manual turn of the turret, and locks into place.

PUNCH PRESS—*Whitney Metal Tool Co, Rockford, Ill.* No. 331 40-ton press has welded-steel frame, pancake-type motor, heavy flywheel and gearing located at rear of frame, non-repeat clutch, and heavy bolster plate. Specifications include: depth of throat, 12 in.; 84 spm; length of stroke, 2½ in.

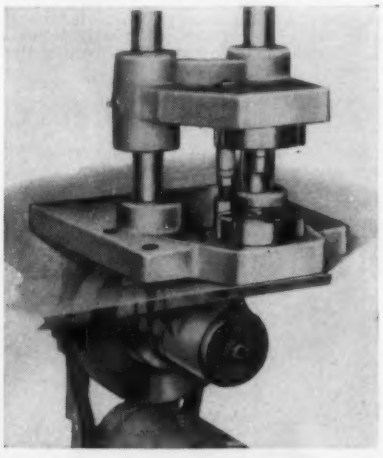
PUNCH-PRESS SOLENOID CONTROL—*Searjeant Metal Products Inc, 77 Pittsford Rd, Mendon, NY.* Two-hand electro-solenoid control requires operator to push 2 buttons to trip press. Added stations can be installed for multi-operator setups. Foot control available.



PRESS LOADER—*Hautau Engineering Co, 721 Wanda, Ferndale 20, Mich.* Motor-driven universal floor-model has two arms rotated through 120° to pick parts singly from conveyor line, deposit them in press, and unload to another conveyor. Cycle time is two seconds.



AUTOMATIC STAMPING PRESS — *Precision Welder & Flexopress Corp, Cincinnati 10, Ohio.* 50-ton capacity unit features "Revertomatic" adjustable speed drive which permits clutching at low speed and building to predetermined high speed at adjustable rate. Speed is infinitely adjustable from 90 to 350 spm with standard 3-in. stroke.

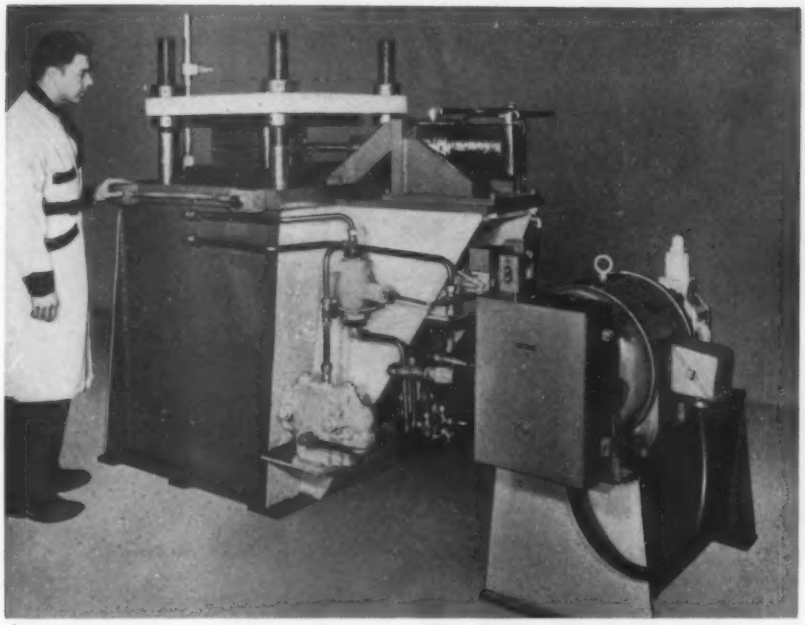


ONE-TON PRESS—*Swanson Tool and Machine Products, Inc, Erie, Pa.* Die set on top, flywheel, and clutch underneath, motor on the floor. 1¼-in. stroke, 3 to 6 in. shut height; will make 200 spm.

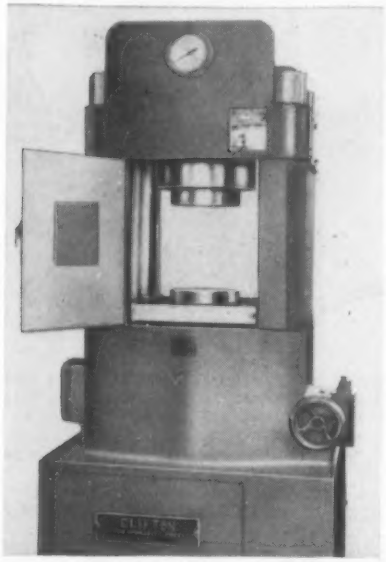
BENCH PRESS—*Alva F Allen, 1001 No Third St, Clinton, Mo.* Single-pin clutch gives position action, operated by hand lever. Will make 200 strokes per min.

PRESS—*Sales Service Machine Tool Co, St Paul, Minn.* No. 0 features heavy-duty bronze bushings in flywheel and heavy bronze wear plates in ramway, as well as new heavy-duty clutch. Capacity is 5 tons.

AUTOMATIC PRESS — *Di Machine Corp, 2701 W Irving Park Rd, Chicago 18.* 40-ton, 28½ in. between uprights uses back-to-front feed. Pneumatic clutch, variable-speed motor permit speed of 72 to 360 spm.



INVERTED HYDRAULIC PRESSES —*Walter P Hill, Inc, 22183 Telegraph Rd, Detroit 19, Mich.* Line is adaptable to variety of stamping and extrusion operations. Presses have control cylinder in machine base. Construction features a hydraulic cylinder operating at 5000-psi pressure, flange-mounted on the bottom side of the die table, with its piston rod in a vertical position extending downward through the base of the press.



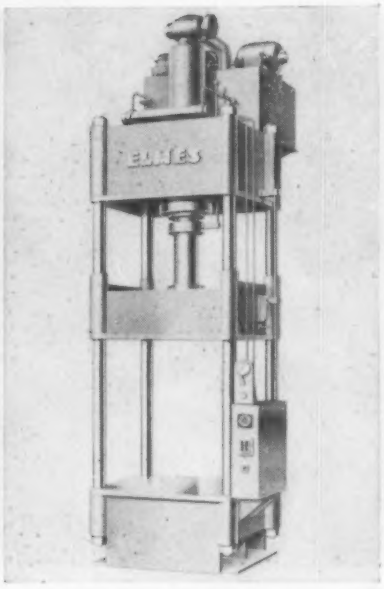
HYDRAULIC PRESS — *Clifton Hydraulic Press Co, Clifton, NJ.* Has 600-ton capacity and 6-in. stroke; size of platen is 4x17 in. Press features "Unitrol"—a complete hydraulic circuit eliminating two-hand control by regulating both pumps.

FORCE DEVICE—*Federal Machine & Welder Co, Warren, Ohio.* Hydropneumatic applied to double-action press acts as safety overload protector and allows blankholder pressure to be adjusted independently at all four corners.

HYDRAULIC BENCH PRESS—*Alliance Manufacturing Co, Alliance, Ohio.* Air-oil combination press delivers 5 tons when connected to 100-psi airline. Pressure is generated by an integral air-actuated booster. Press operates on dual-pressure system. Average consumption is ¼ cu ft of air per stroke. It is equipped with an automatic timer; stroke is adjustable from 3 in. to zero.

PRESS CONTROL UNIT—*Danly Machine Specialties, Inc, 21000 S Laramie Ave, Chicago 50, Ill.* For positioning the run and stop buttons of a press. Buttons are mounted on a sturdy control bar suspended from press by universally adjustable telescoping arm. Major movements of the adjustment arm are made with worm gearing turned from handwheel.

HOBBING PRESS—*M & N Hydraulic Press Co, Clifton, NJ.* Simplified power system saves space, pipe, and pressure.



HYDRAULIC PRESS—*American Steel Foundries, Elmes Engrg Div, 1150-A Tennessee Ave, Cincinnati 29, Ohio.* For fiber glass molding; capacities from 50 to 300 tons. Main ram capacity, 100 tons; stripping capacity, 30 tons; operating pressure, 2460 psi; 36-in stroke; accommodates dies to 48 in. from left to right and 36 in. from front to back.

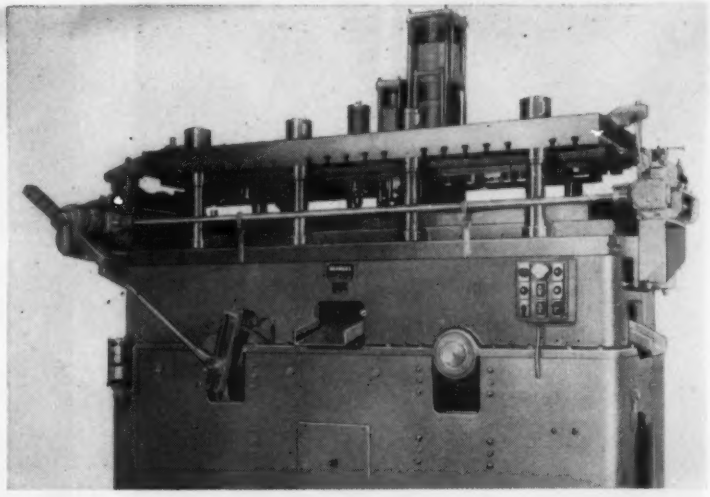
FORMING PRESS—*American Steel Foundries, Elmes Engineering Div, 1150-A Tennessee Ave, Cincinnati 29, Ohio.* 450-ton single-action; incorporates pipeless construction. Operating speeds per minute: advance, 550 in.; press, 126 in.; return, 550 in. Press is pushbutton-operated.

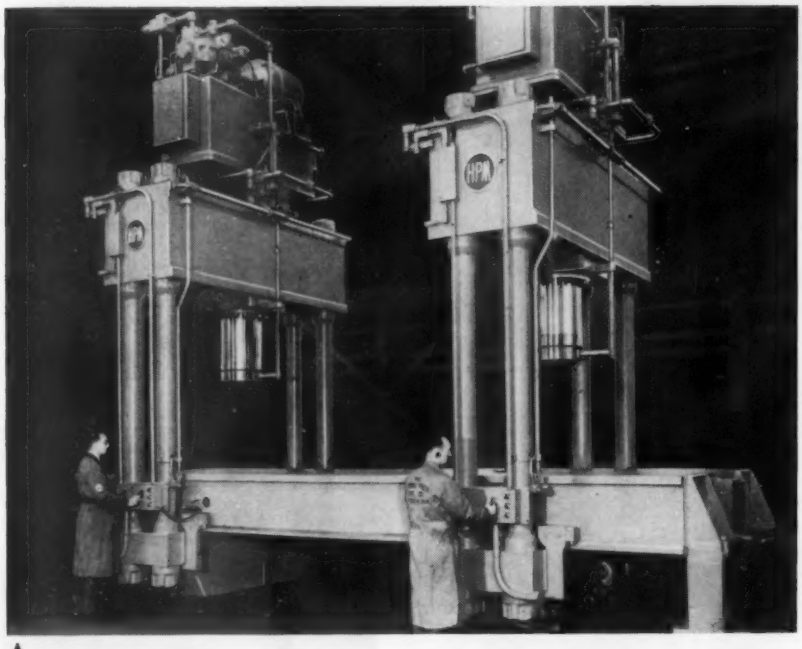
OFFSET-FORMING MACHINE — *Intercontinental Mfg Co, Inc, Garland, Texas.* Joggler machine forms uniform, dimensionally accurate joggles at low cost. It is actually a combination of two angle blocks, one of which remains stationary while the other is free to move in any degree parallel to the stationary block. Joggle is formed automatically by pushbutton control. The depth of the joggle and the direction of forming are preset by adjusting a knob and setting a visual indicator.

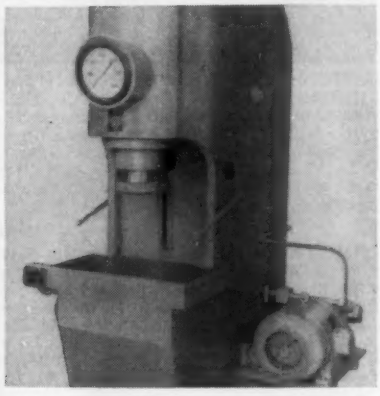
PROGRESSIVE DIE PRESSES—*The Brandes Press Co, Brandes Bldg, 6408 Euclid Ave, Cleveland 3, Ohio.* Multi-crank; designed to add double-crank combinations. Sizes from 100 to 4000 tons. Pictured is the 300-ton press for progressive dies to 12½ ft in length.

EXTRUSION PROCESS—*Scaife Co, Oakmont, Pa.* Produces shell in one piece from simple billet; features are in substitution of billet stock for seamless steel tubing, as well as savings of 25% in steel used. Glass lubricant used facilitates hot-press forming operation and permits new die designs.

TRAVELING-HEAD PRESS — *Lake Erie Engineering Corp, Box 68, Kenmore Station, Buffalo 17.* 2000-ton twin-carriage unit straightens castings 22x10 ft weighing 46,000 lb. Length 40 ft, width 23 ft, height 30 ft. Bed size, 12 ft 4 in. wide, 36 ft long. Twin traveling heads each deliver 1000 tons.





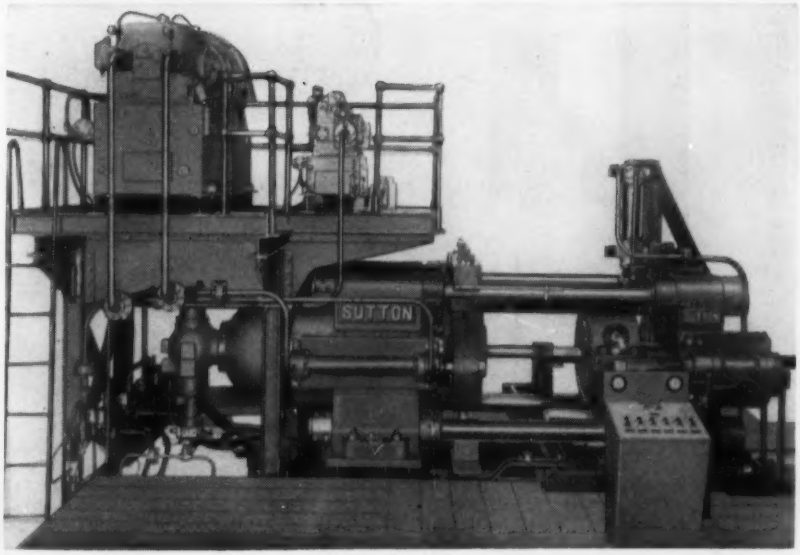


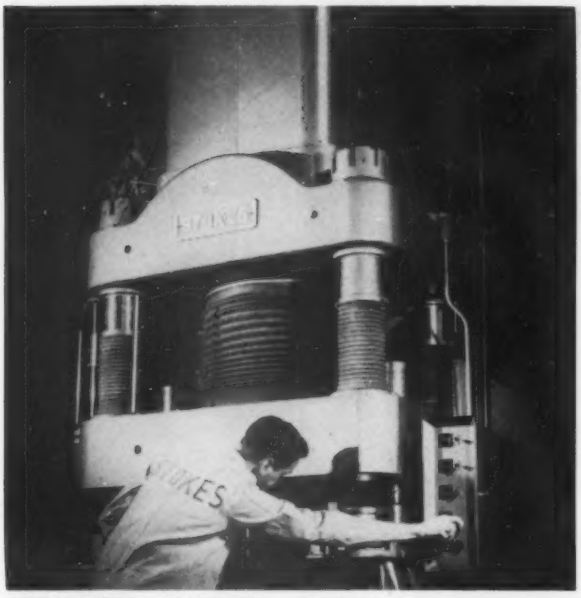
STRAIGHTENING PRESSES—*American Broach & Machine Co, Ann Arbor, Mich.* Vertical, hydraulic; capacities, 75, 100, and 150 tons. Rapid advance, power pressing, and rapid return stroke. Hydraulic circuit includes two separate pumping units, both used for rapid advance and return stroke. Cylinder diameters are 9, 10 and 12½ in.

STRAIGHTENING PRESS—*The Hydraulic Press Mfg Co, Mount Gilead, Ohio.* 2-way, with 2 pressure units, each with 400-ton capacity. Bed is 264 in. long, 96 in. wide. Each ram has 24-in. stroke; distance from raised nose to bed, 60 in.

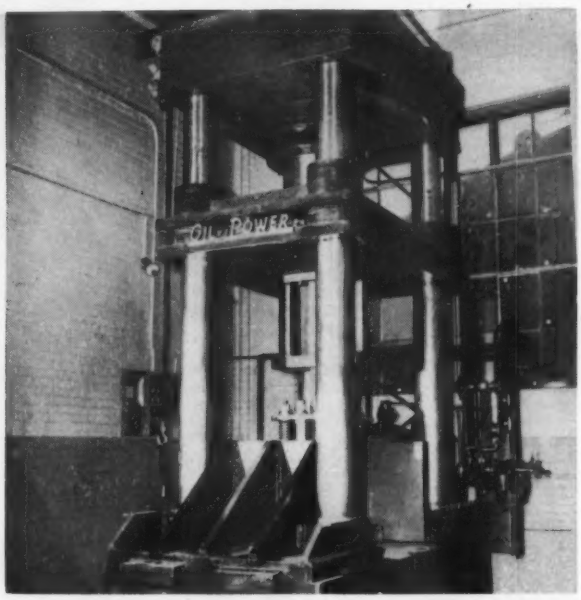
INTERCHANGEABLE PRESS—*Stanley H Holmes Co, 3300 W Lake St, Chicago 24.* By removing 4 bolts and replacing one quick-change table with another, press will do either forcing or straightening. Hydraulic valve system can be removed and replaced. Stroke varies on different models from 10 to 30 in.

HORIZONTAL EXTRUSION PRESS —*Sutton Engineering Co, Bellefonte, Pa.* 750-ton; non-ferrous metals to 4 7/16-in. diameter. Incorporates extra fast cycling, positive billet loading, easy die change, heavy duty shear of high capacity.

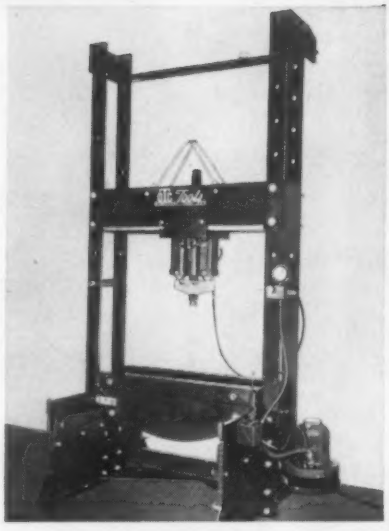




AUTOMATIC POWDER - METAL PRESS—*F J Stokes Machine Co, Philadelphia 20.* 300-ton model takes molds with 8-in. depth of fill, for parts up to an 8-in. dia and 3-in. thickness. Rate is 4 to 10 spm. Panel controls cycle for manual, semi-autcmatic, or full automatic. Shuttle feed shoe.



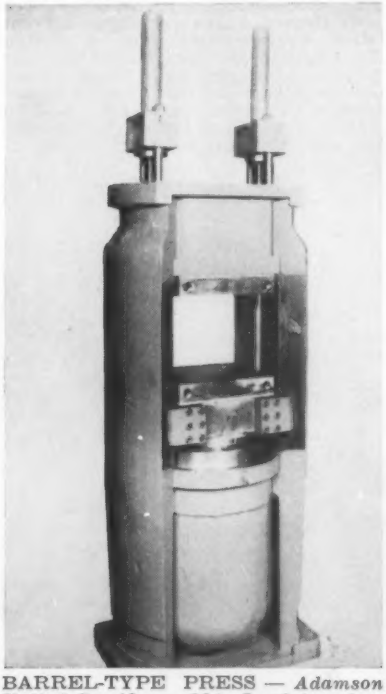
TWO-RAM POWDER PRESS—*Oilpower Engrg Co, Schenectady 5, NY.* Top 1250-ton double-acting ram and 900-ton side ram act independently. Max opening, 8 ft; hydraulic unit, 40-hp motor; oil reservoir, 250 gal. unit is for split-die pressing of powders and for titanium and zirconium sponge.



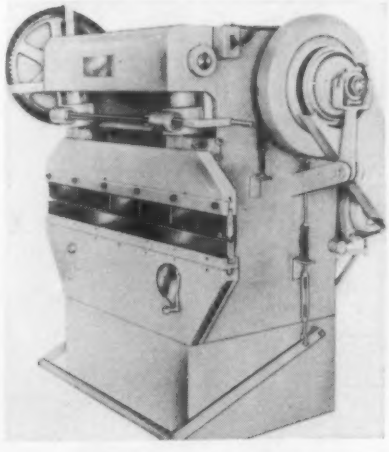
FORCING PRESS — *Owatonna Tool Co, 383 N Cedar St, Owatonna, Minn.* Operated by electric pump at 10,000 psi, 100-ton hydraulic press has Power-Twin center-hole ram which can be detached and used as portable power unit. Bolster rolls forward for loading, ram has 5-in. travel. Max clearance is 61 in., min 13½ in.

BENCH PRESS—*Queens Tool Engrg & Mfg Co, 15 Front St, Rockville Center, LI, NY.* For precision assemblies, other operations that require perfect line up and controlled depth. Micro stop engages one tooth of gear rack for positive lock. Dial indicator is graduated in 0.001 in.

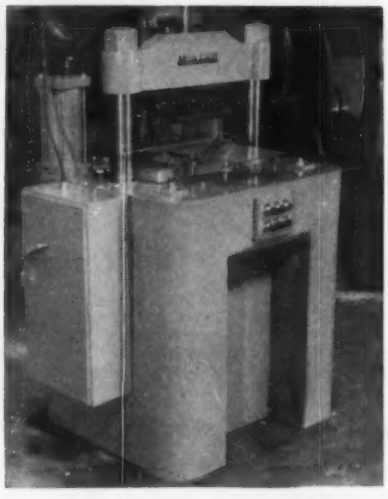
UNIVERSAL BENCH BRAKE — *W Whitney Stueck, Inc, Old Saybrook, Conn.* Model U322 has capacity of ⅜ flange on 22 gage mild steel 3 ft long. Fingers of case-hardened steel in widths of 2, 3, and 4 in. allow box depths to 3 in. Price, $148.50.



BARREL-TYPE PRESS — *Adamson United Co, Akron, Ohio.* In platen sizes of 12x12 to 44x44 in.; ram diameter is equal to principal platen dimensions. When the press is operated at 2,000-psi hydraulic pressure, it develops a force of 1,560 psi over the entire platen area.

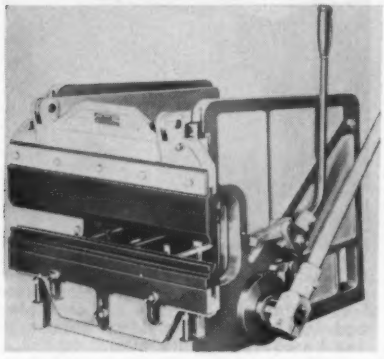


BENDING BRAKE — *W Whitney Stueck, Inc, Old Saybrook, Conn.* Connecticut Press Brake, for sheet metal, bends 16-gage mild steel 4 ft wide over ½-in. die opening, or 10-gage, 2 ft wide over 1½-in. die. Speed is 40 fpm.

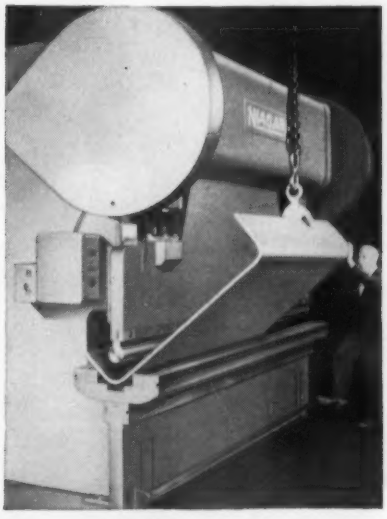


V-FORMING BRAKE—*Dayton Rogers Mfg Co, 2824-13th Ave South, Minneapolis 7.* Stub power press brake provides controlled pressure. Work cycle is divided into low pressure advance and high pressure forming. Stroke from 2 to 11 in.; capacity, 42 tons at 100 psi.

PRESS BRAKE — *The Cincinnati Shaper Co, Hopple, Garrard & Elam Sts, Cincinnati 25, Ohio.* For high-speed punching and automatic feeding; operates at 70 spm. Pushbutton control for ram adjustment with micrometer indicators.



PRESS BRAKE—*O'Neil-Irwin Mfg Co, Lake City, Minn.* Capacity: 24 in. of 16-gage mild steel. Rating: 8 tons. Incorporates cam-lever mechanism for normal forming operations plus ratchet drive. Width of anvils is 24 in.

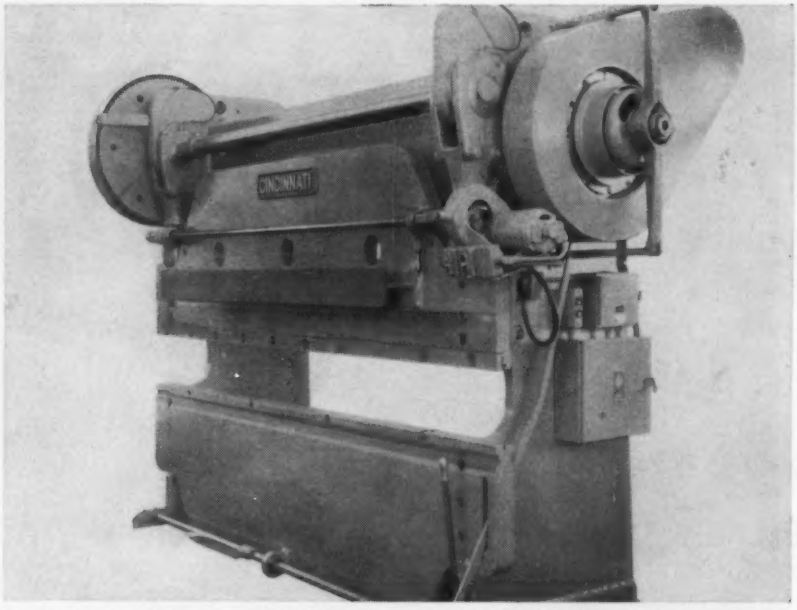


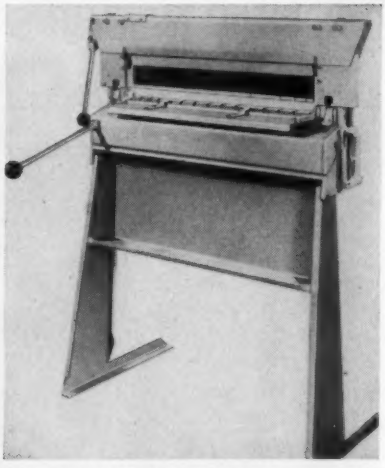
PRESS BRAKES—*Niagara Machine & Tool Works, 683 Northland Avenue, Buffalo 11, NY.* Complete 50- to 175-ton line for forming, bending, punching, blanking, and related operations. To assure uniform bends with straightedge accuracy, double-end twin drives with double-reduction gearing provide constant application of power.

TRIMMING PRESS—*Brehm Div, The Steel Products Engineering Co, Springfield, Ohio.* Uses Brehm trimming die more efficiently; is 8 ft high, takes 22 sq ft. By changing cutter adapters, it trims shells to 16 in. square and 6 in. deep. Ram stroke is 15 in., time for trimming cycle 4 sec.

HEAVY-PLATE SHEAR — *Cleveland Crane and Engineering Co, Wickliffe, Ohio.* Model 24G-8 for production shearing of steel plate in sizes up to 8 ft long by 1½ in. thick.

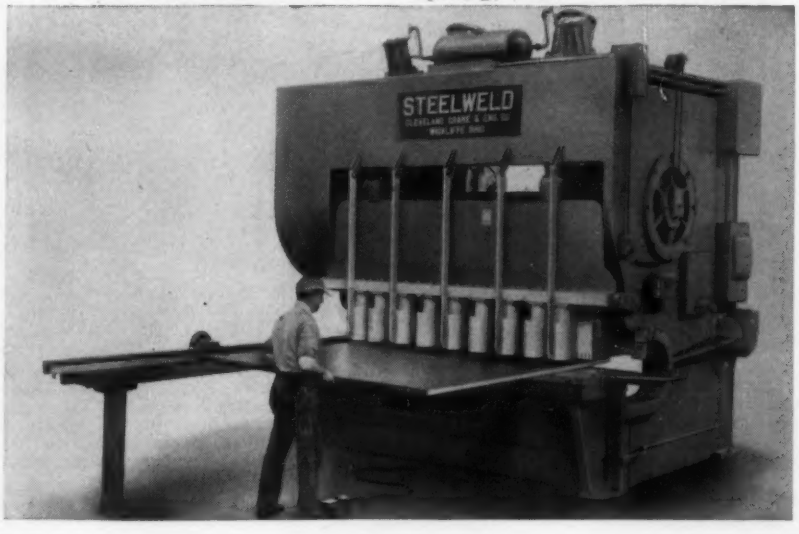
NIBBLER—*Buckeye Tools Corp, Div 9, PO Box 966, Dayton 1, Ohio.* Portable, air-powered, cuts sheet metal up to 18 gage. Extended head permits use in confined areas; follows any contour.



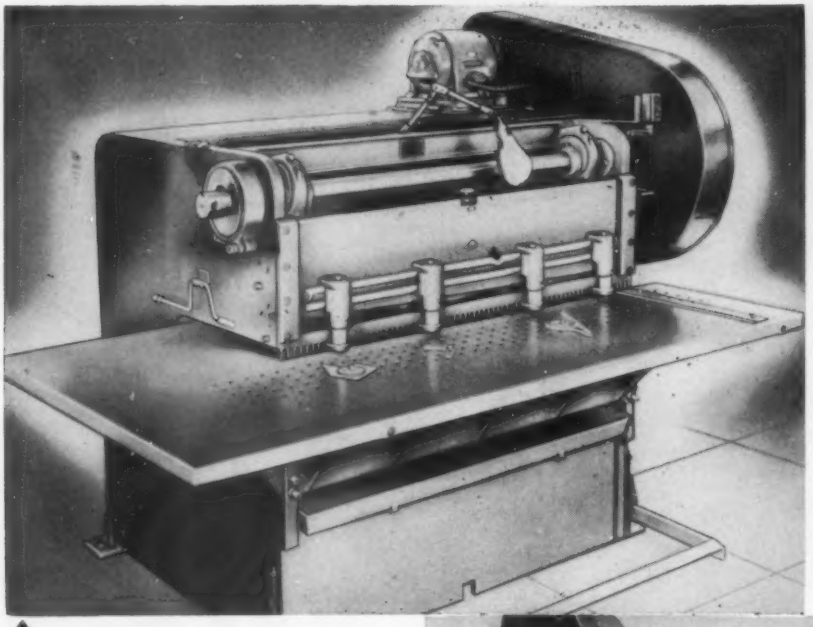


HAND PRESS BRAKE—*R A Smith, 1123 Elizabeth Ave, Waukegan, Ill.* Takes 18-gage sheets to 26 in. wide, 3/16-in. mild steel 1¼ in. wide. Flanges at 180° may be made 1¼ in. wide and any width may be formed up to 164°.

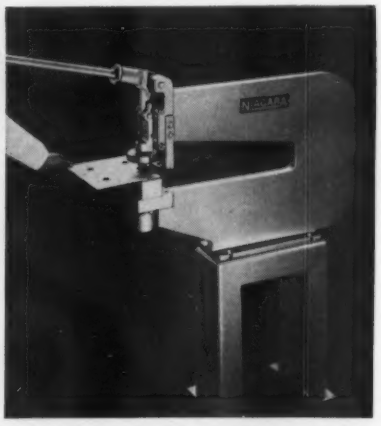
STANDARD PRESS BRAKES—*Verson Allsteel Press Co, 9316 S Kenwood Ave, Chicago 19, Ill.* Larger brake, 25-ton capacity, will bend 78 in. of 16-gage mild steel over a ½-in. die opening; $2190. The smaller brake is rated at 15 tons capacity and will bend 48 in. of 16-gage mild steel over ½-in. die opening; $1455.



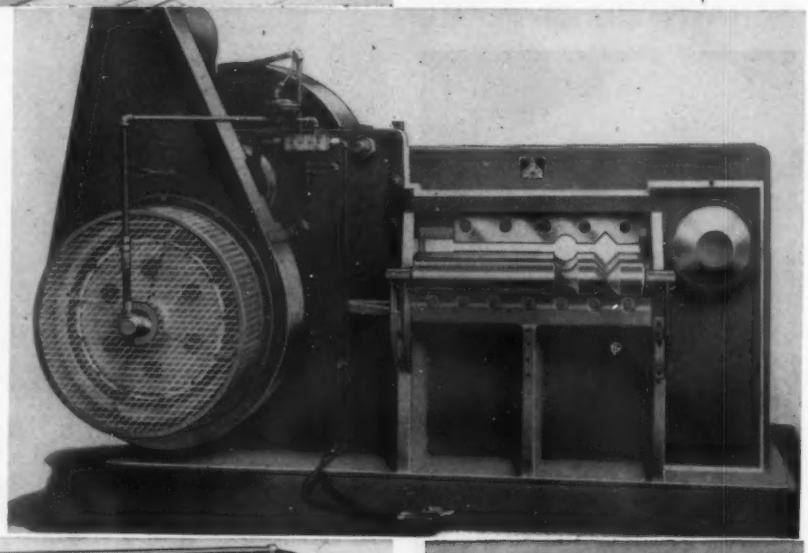
FORMING, FORGING, CASTING—brakes, shears, bending



SQUARING SHEAR—*The Manchester Machine Corp, Box 724, Manchester, Conn.* Two models with 52-in. and 16-in. blade lengths, have throat depths of 24 and 7½ in., respectively. The larger machine will cut Duralumin, mild steel, and stainless steel in gages to ¼, ⅛, and 3/32 in., respectively. Smaller model cuts Duralumin mild steel, and stainless in gages to ⅛, 3/32, and 1/16 in., respectively. Both machines operate at 120 strokes per min.

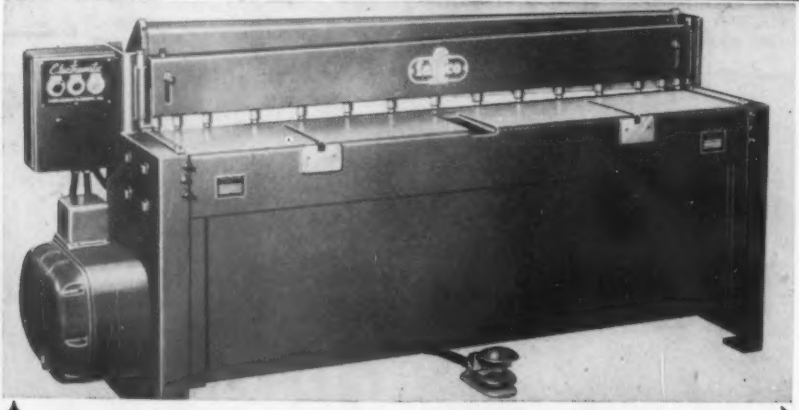


PUNCH AND SHEAR—*Niagara Machine & Tool Works, 637-697 Northland Ave, Buffalo 11, NY.* No. 5-24 is a 5-ton capacity unit with a 24-in. throat. It may be equipped as a punch or shear, or both, and is easily converted from one to the other. Slits sheets of infinite length up to 48 in. wide down the center.

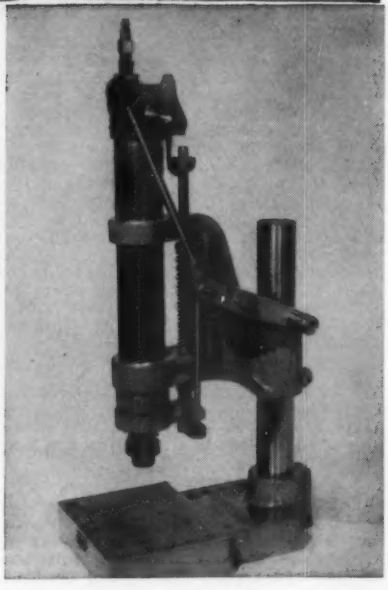


SHEAR—*Hill Acme Co, Canton Div, 1201 W 65th St, Cleveland 2.* Rounds, squares, flats, angles, channels, I-beams, and special shapes are cut by lever-operated shear that mounts 36-in. knives. For smaller work, 10½-in. blades may be installed.

SHEAR—*The Cincinnati Shaper Co, Hopple, Garrard & Elam Sts, Cincinnati 25, Ohio.* Cuts mild steel of 1½-in. thickness by 4 ft. long. Equipped with front-controlled, power-operated back gage having 48-in. range.

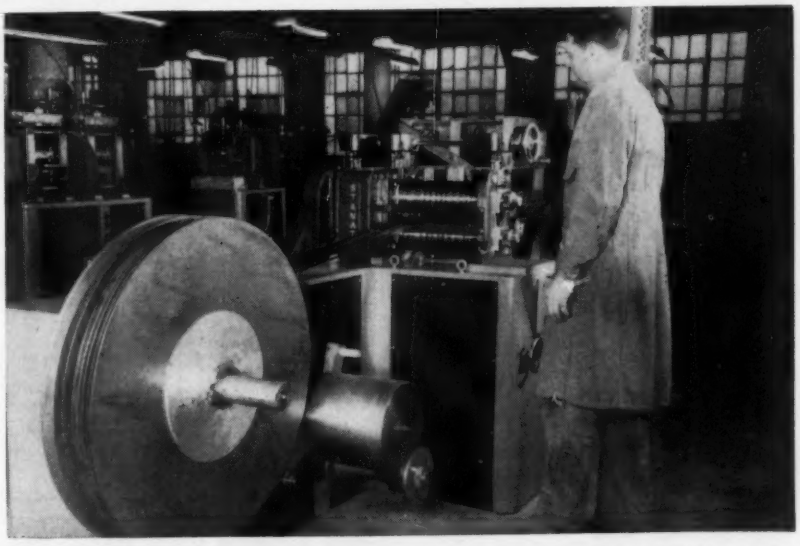


SQUARING SHEAR LINE — *Famco Machine Co, Kenosha, Wis.* Includes eight power-driven, six foot, and four air types; capacities range from 20- to 14-gage mild steel in 22- to 72-in. sheet widths. The power-driven shear line features the electromatic clutch—the instant-action electrically controlled 9-point jaw clutch.



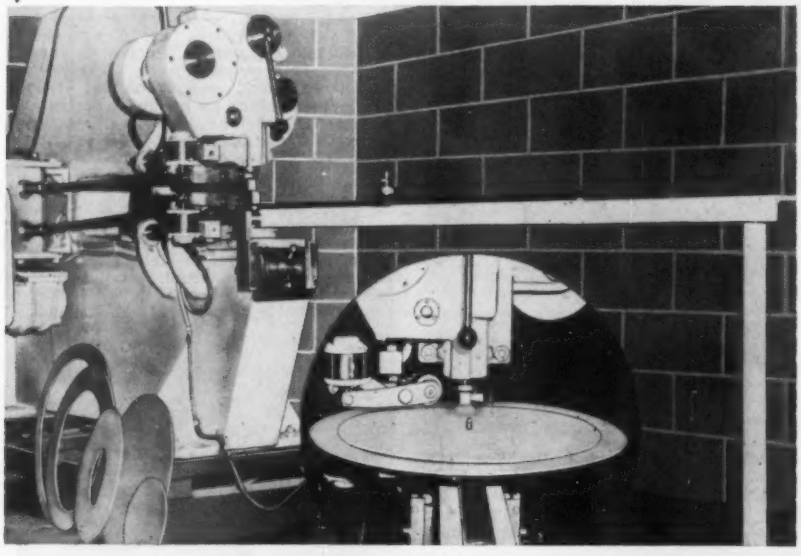
AIR HAMMER—*Heidrich-Nourse Co, 631 E Third St, Los Angeles 13.* Model 2-CSB is smaller version of 3-VS single-stroke air hammer. Stroke length is constant, impact force from 0 to 7000 lb is regulated by volume of air input.

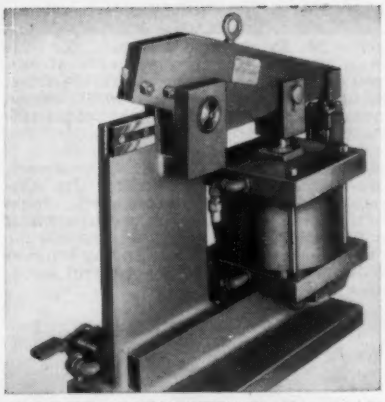
SLITTERS—*Stanat Mfg Co, 47-30 37th St, Long Island City 1, NY.* Model S-180 has 2½-in. arbor, model S-350 has 3½-in. arbor for coil widths of 8, 12, 18, 24 in. Recoiling can be done on plain arbor, solid drum, core plate, or expanding drum. Capacities vary up to 6000 lb.



STEEL-SLITTING MACHINE — *Economy Steel Service Co, 832 W Irving Park Blvd, Chicago 13.* For slitting and edge-rolling with as little trim as the thickness of the steel. Machines have reworked coils by slitting as little as 0.0008 in. from them.

SLIDING CENTER ATTACHMENT—*American Pullmax Co, Inc, 2455 N Sheffield Ave, Chicago 14, Ill.* Outside attachment with sliding center increases radius capacity for cutting circles with American Pullmax sheet and plate-working machine. Can be designed for different applications and made in different lengths.



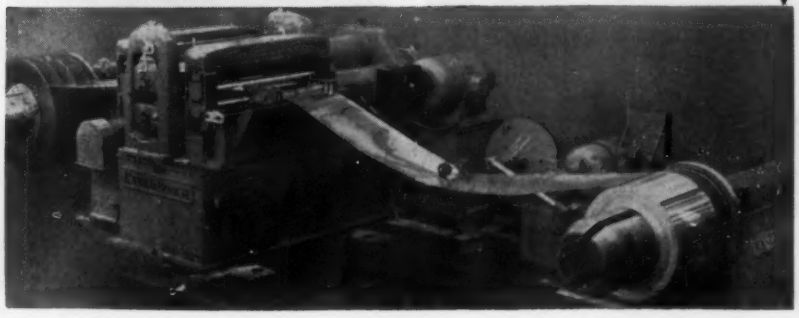


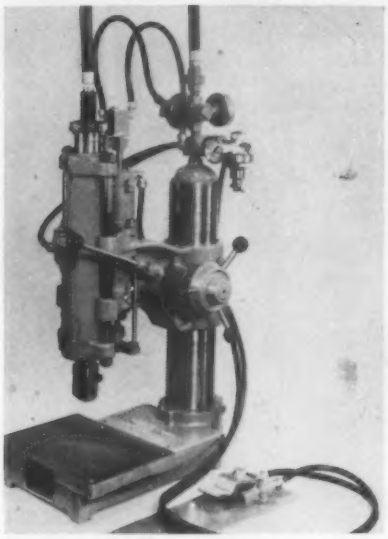
AIR-OPERATED SHEAR—*Curry Air Shear Corp, 941 Oliver Bldg, Pittsburgh 22.* Cuts cold ferrous and nonferrous bars up to 1¼-in. dia. Operates at pressures from 60 to 125 psi—has no motors or gears. Cuts 1-in.-dia cold mold steel at 80-psi with speed of 2 sec per cycle.

PUNCH PRESS — *Black & Webster Inc, Dept AM, 445 Watertown St, Newton 58, Mass.* Model F Electro-punch has open-back C-frame; solenoid and ram are fixed in height. It delivers uniform impacts, adjustable to 3500 lb at rates to 125 blows a minute.

PLATE CUTTER—*Nord International Corp, 449-5 Central Ave, Orange, NJ.* Cuts plate up to 5/32-in. thick and circles up to a dia of 28½ in. Makes up to 1500 strokes per min, cuts up to 36 fpm in 16-gage steel, bends steel as thick as 14 gage. Mouth opening is 6 in., throat depth 28 in.

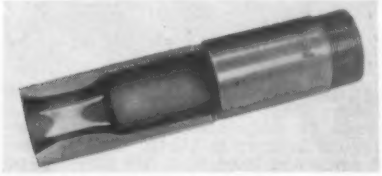
SLITTING LINE — *Kane & Roach, Inc, Syracuse, NY.* Will handle material of 48-in. width with dia of cutting arbors of 7 in. Coil capacity is 600 lb by 48 in. wide. Uncoiler drum, 4-segment type, is expanded and contracted by non-rotating hydraulic cylinder.





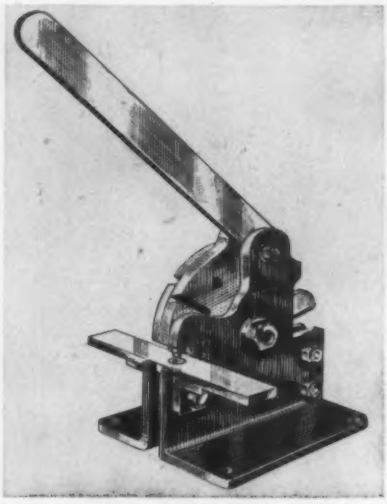
AIR IMPACT PRESS — *Heidrich-Nourse Co, 631 E Third St, Los Angeles 13.* Pneumatic hammer for impression marking has variable stroke and will deliver impact variable from 30 to 30,000 lb at speeds to 10,000 cycles per hr. Tool contacts work before impact occurs.

HYDRAULIC GUILLOTINE — *Manco Manufacturing Co, Bradley, Ill.* Capable of shearing mild steel strips 5/16x25-in.; designed for use in cutting coiled strip stock. Head weighs 600 lb; can be suspended from spring-tension balancer. Manual valve control actuates the unit.

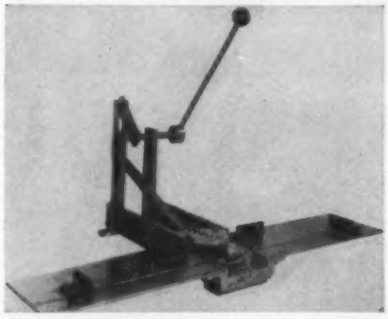


SPLIT-FEED FINGERS—*Balas Collet Mfg Co, Cleveland 14, Ohio.* Hex chamfer in back hole assures stock is in line with hex in feed finger when loading.

DRIVE UNIT—*Wysong & Miles Co, Greensboro, NC.* For all power squaring shears in Wysong line. Gears run in oil. Unit is fully enclosed.



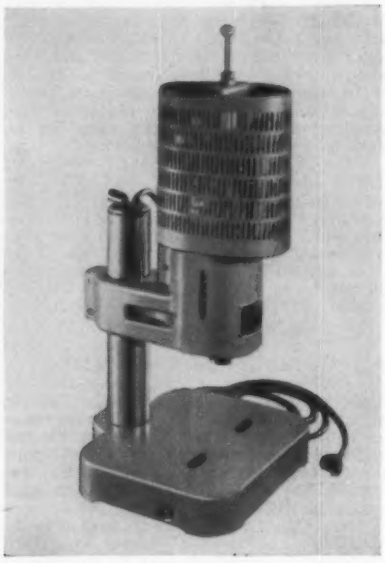
FOUR-WAY UNIT—*Albert J Tatu, Inc, 85 Columbia Drive, Williamsville 21, NY.* Punches, forms, shears, and rivets. Throat depth is 1 in.; separate threading attachment is available. Two additional punches have been added, making it possible to punch holes from ⅛ to ¼ in. in 1/32- in. depths.



NOTCHER—*US Tool & Die, Inc, 4 N Main St, Sharpsburg, Pa.* Hand-operated bench unit develops 2600 lb for cuts spanning up to 3 in. Corner and angular reliefs, notches, and nibbles can be made.

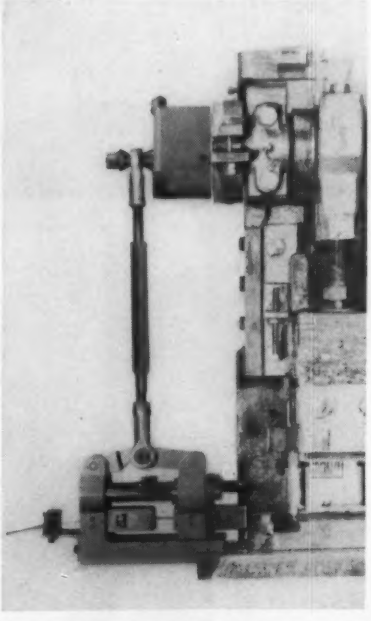
POWER NIBBLER — *Nord International Corp, 449-5 Central Ave, Orange, NJ.* Model G. With detachable crank case; also beads, folds, cuts straight or circular, and cuts slots, louvers as well as irregular or freehand. Largest circle is 28½ in. in dia and smallest 2 23/64 in.

SLIDE FEED—*Durant Tool Supply Co, 136 S Water St, Providence 3, RI.* Uses check roller system for positive stock control. Available in 7 sizes.

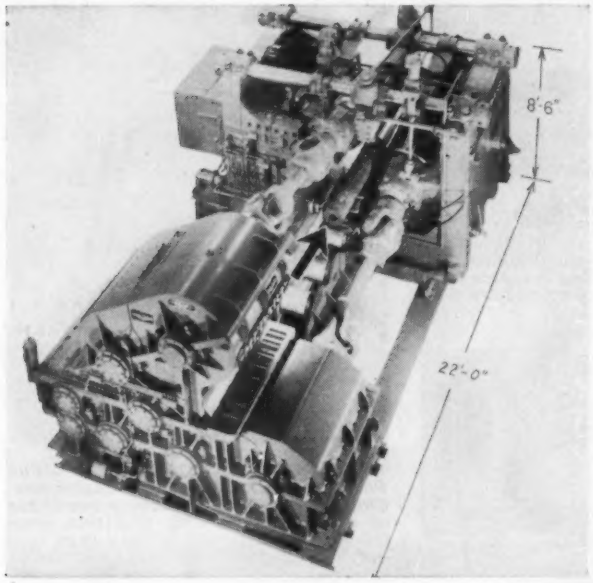


IMPACT TOOL — *Black & Webster, Inc, 445 Watertown St, Newton 58, Mass.* Electro-punch, Series 4, incorporates improvements in adjustment, operation, and maintenance. Same basic dimensions as previous series are retained, as well as delivery of variable impacts up to 3500 lb at rates of more than 125 blows per minute.

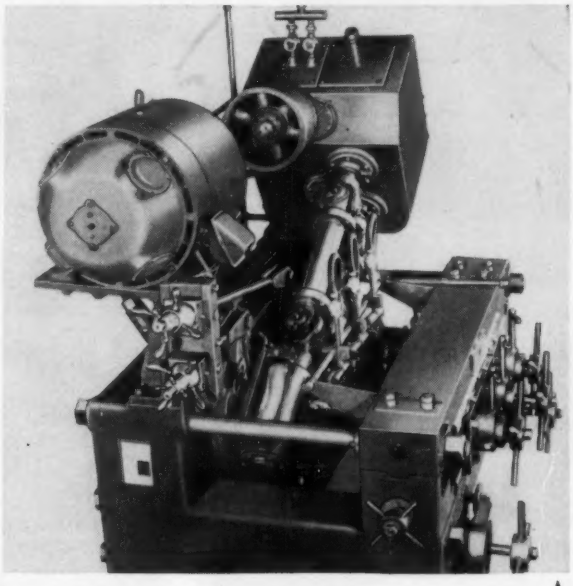
STOP GAGE INDICATOR — *Durant Mfg Co, 1945 N Buffum St, Milwaukee 1, Wisconsin.* Eliminates necessity for operator of squaring shears to go to back of machine to determine exact setting of back gage. Indicator is mounted near the pushbuttons which control the power-operated back gage.



POWER-PRESS FEED—*Nadel Mfg Co, 20 Warren St, New York 7, NY.* Micro-Slide Feed feeds sheet stock for stamping within "tenths." Locks material from both top and bottom simultaneously on forward stroke, and releases simultaneously on back stroke. Resilient floating rollers permit stock to move forward only; grippers automatically adjust for different thicknesses.

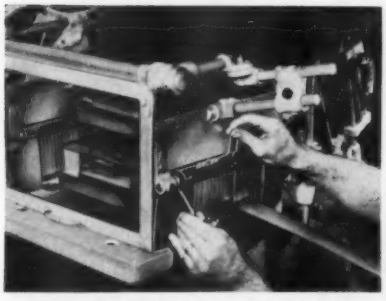


AUTOMATIC MACHINE—*Medart Co, 3535 DeKalb St, St Louis 18.* Two-roll, continuous straightener, sizer, and polisher handles tubes or bars from 3 to 10½ in. in dia, and as short as 3 ft long. All controls are power-operated. Drive is from 200-hp direct-coupled dc motor.

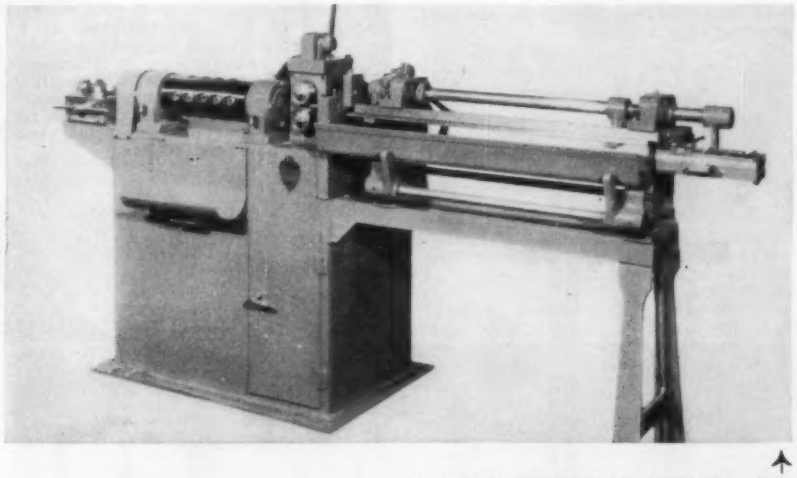


POWER-DRIVEN STRAIGHTENER—*United States Tool Co, Inc, Ampere, East Orange, NJ.* Has variable speed drive in place of single-speed motor; suitable for cold-rolled steel up to 6x⅛ in. Pair of power-driven take-in rolls, 7 plain straightening rolls, pair of power-driven take-out rolls, 5 to 1 variable-speed drive, output of 10 to 50 fpm.

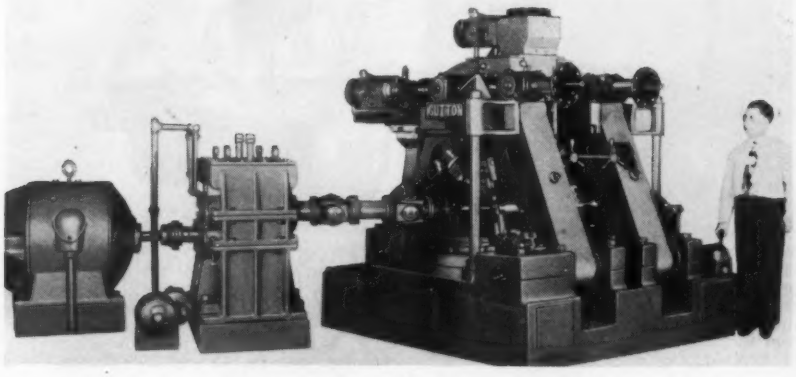
HEAVY-DUTY STRAIGHTENER—*Sutton Engineering Co, Bellefonte, Pa.* Handles hot-rolled bars and heavy-walled tubes, has water-cooling system for handling special alloy bars at high temperatures. Tubes from 5/16 to 3-in. OD and bars to 2-in. dia are handled with straightening speed ranging to 400 fpm.



SAFETY DEVICE—*American Allsafe Co, 1240 Niagara St, Buffalo, NY.* Air-controlled die enclosure for punch presses limited to primary operations. Transparent window is quickly opened to allow die changes or to adjust stock. While window is open, press cannot be tripped.

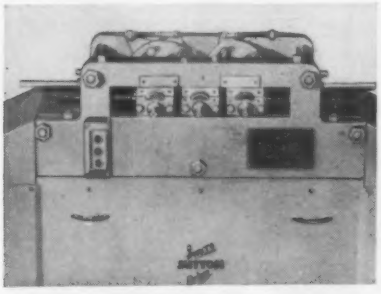


STRAIGHTENING MACHINE — *The G C Patterson Machine Co, 3409 Trumbull St, Cleveland 15.* Removes waves, bends, and kinks from 1/16 to ¼-in. dia wire, and cuts lengths up to 40 in. at rate of 25 fpm.

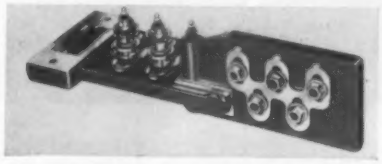


SLIDE FEED—*Cooper Weymouth, 277 Noble Ave, Bridgeport 8, Conn.* Air-operated; open throat feeds stock in any width, as well as wire and tubing. Positive stock control clamp, single motion gripping action, simple screw adjustment to control rate of feed.

STRAIGHTENING MACHINE — *Sutton Engrg Co, Bellefonte, Pa.* Model 2 MKTC 7-roll for end-to-end straightening of 1¼ to 3¾-in. OD tubes and bars from 1¼ to 3-in.-dia.

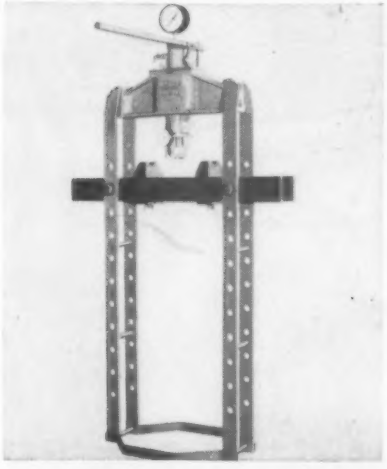


STRAIGHTENER—*Sutton Engineering Co, Bellefonte, Pa.* Synchro-Drive unit has five rollers, all angularly adjustable for spacing, with two driven rollers and three pressure rolls. No. 00; capacity 1/8 in. to 5/8 in.; operates at 60 to 300 fpm, powered by 2-hp variable-speed drive.



WIRE STRAIGHTENER — *Durant Tool Supply Co, Providence 3, RI.* Two sets of 5, 7, 9, or 11 rolls can be individually adjusted to handle wire of any section.

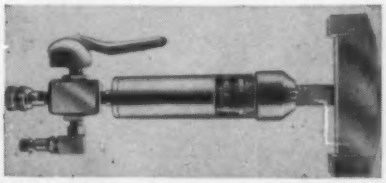
STOCK STRAIGHTENER — *Durant Tool Supply Co, 136 S Water St, Providence, RI.* Multi-roll straighteners for various sizes and gages from 2 to 8 in. wide. Motor-driven type with powered entering rolls available.



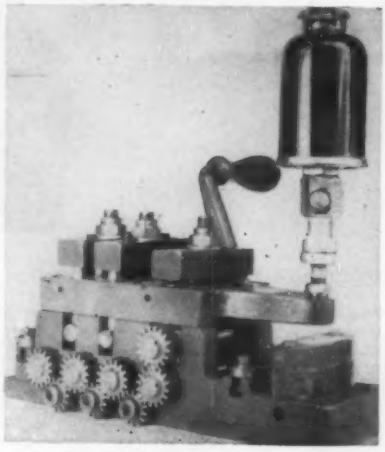
STRAIGHTENING PRESS—*Arthur J Hurt & Co, Denver, Colo.* Hand-pumped hydraulic press has V-blocks, central ram, dial indicator.

AIR PRESSES—*Price Machine Products, 929 W 80th St, Los Angeles.* Range from 3/4 to 2 tons. Self-aligning subpresses, optional, permit quick setup change. 4 models, 4 to 7-in. cylinder bores.

PLATE BENDING ROLLS — *Pope Machine Co, Inc, 5201 S First St, Seattle, Wash.* All-steel construction; include both pyramid and initial pinch types; used in industrial plants for rolling steel, aluminum, and other nonferrous plate.

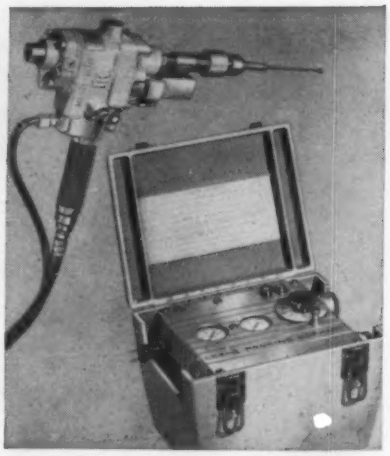


STRAIGHTENER — *Manco Mfg Co, Bradley, Ill.* Ends of coil rod are processed by application of 10-ton hydraulic thrust that straightens 4-ft lengths in about 16 sec. Handles 5/16- to 1-1/16-in.-dia rod. Powered by 2-hp electric hydraulic pump.

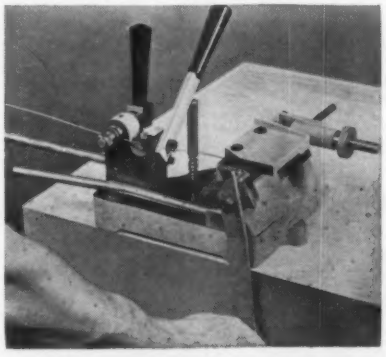


STOCK STRAIGHTENER — *Sperman Metal Specialties, 2199 E 21st Street, Brooklyn 29, NY.* For material up to 2 in. wide; unit has capacity of 0.048 in. in steel, and 0.065 in. in brass and aluminum. Features include: built-in stock oiler with replaceable felts; seven hardened and ground rollers, five for feeding; gear-driven lower straightening rollers and feed rollers.

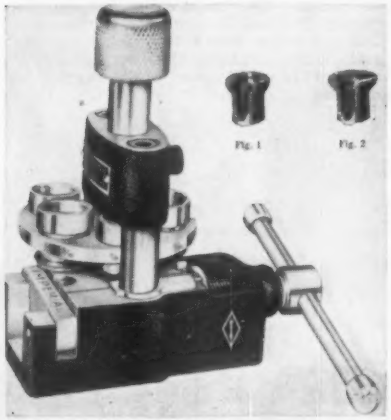
AIR PRESS—*Van Products Co, 3736 W 12th St, Erie, Pa.* Vi-Speed Power House assembles, bends, straightens, punches, stamps, trims, rivets, broaches, crimps, and swages. Provides unlimited pressure adjustment from feathertouch to 2½ tons, hand- or foot-controlled.



TUBE ROLLING CONTROL — *Crane Packing Co, Dept A18, 1800 Cuyler Ave, Chicago 13, Ill.* Combines advantages of air operation with precision electric control. The unit is capable of rolling ferrous tubes up to 2¼-in. ID. It is reported to insure perfectly controlled tube expansion into the sheet, so tightness and holding strength are held to the exact amount required.



SPRING WINDER—*O'Neil-Irwin Mfg Co, Eighth Ave, Lake City, Minn.* Tension-clamp mechanism allows making duplicate springs. Wire gages up to 1/8-in. dia can be wound into extension, compression, torsion, and flat springs, and round, flat, square, and rectangular stock can be handled.

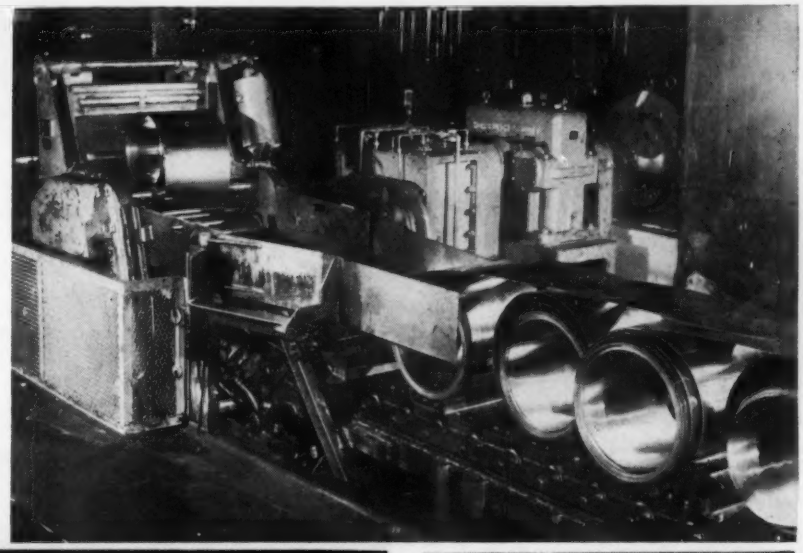


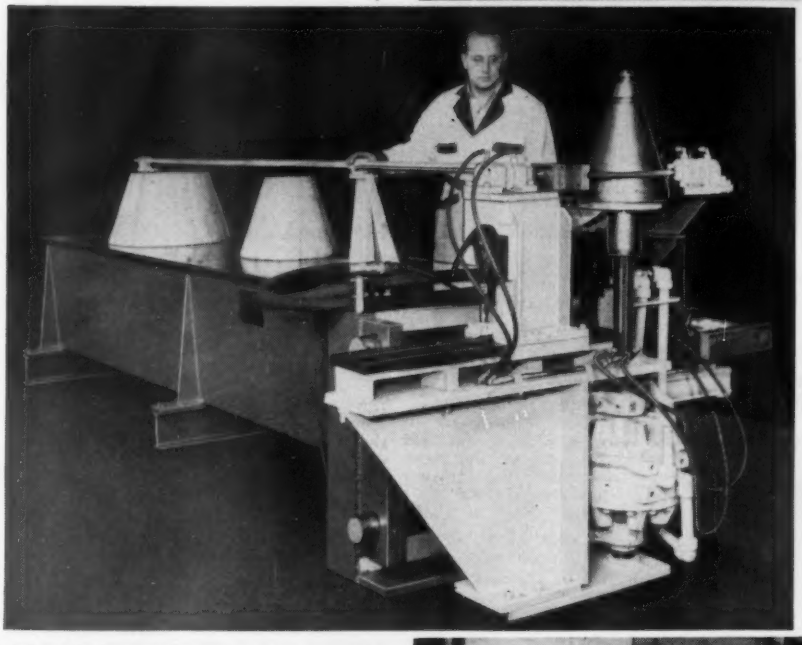
FLARING TOOLS — *The Imperial Brass Mfg Co, 1200 W Harrison St, Chicago 7.* Two tools make double-lap flares for fitting joints on brazed or welded steel tubing such as Bundy, or GM, and also on copper or aluminum tubing, handle 45° or 37° flares.

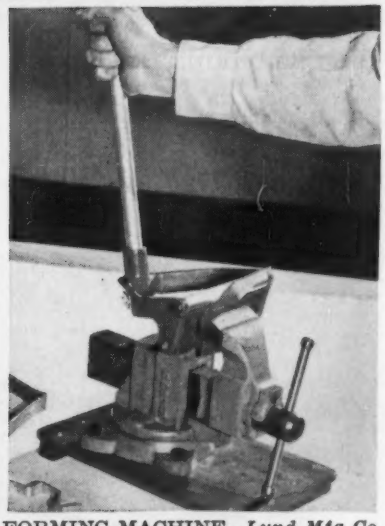
UPCOILER—*E W Bliss Co, Salem, Ohio.* Coils 0.400-in. gage brass and silver alloys in widths to 25 in. Capacity ranges up to 0.4375-in. thickness, to widths of 28 in. on certain mild steels.

FORMING MACHINES—*Reed Engineering Co, 1003 West Fairview Ave, Carthage, Mo.* For joggling or offsetting end of tank shells and pipes for subsequent assembly of welding heads. Turntable permits rotation of work; also rotating work end-to-end, and movement into and out of machine.

TUBE BENDER—*Walter P Hill, Inc, 22183 Telegraph Rd, Detroit 19, Mich.* Hydraulic machine makes bends from ¾-in. to 2-ft radius in finned or plain ferrous and non-ferrous metal tubing up to 40 ft long. Unit bends tubing up to 1½-in.-dia around a cone-shaped steel die, adjustable both vertically and horizontally. Unit has a 30-gpm, 1000-psi pump driven by a 15-hp, 1725-rpm motor.





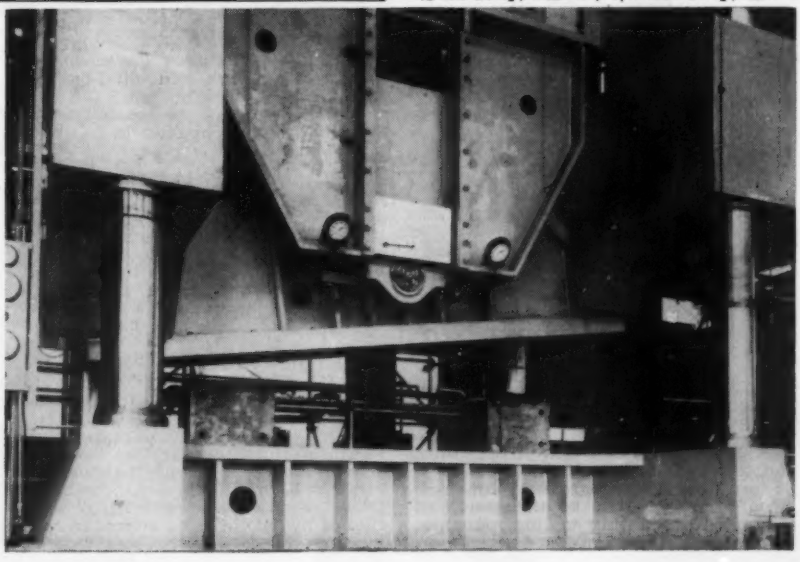


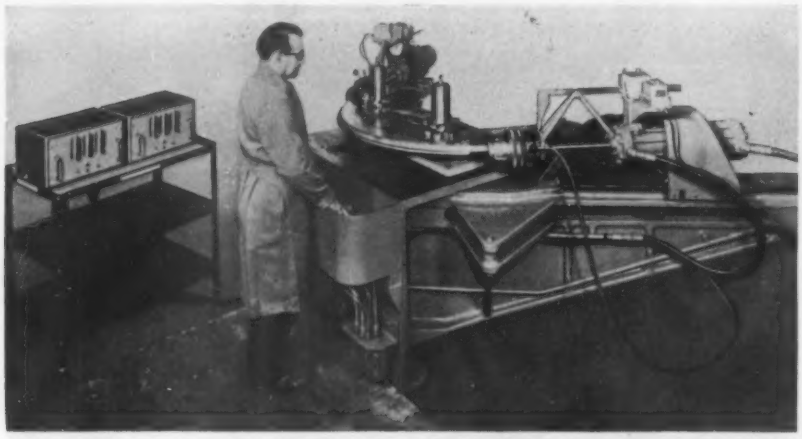
FORMING MACHINE—*Lund Mfg Co, Biddeford, Maine.* Bendit, Jr, machine for bending, forming, and shaping sheet metals. Mild steel capacity is: 18 gage, width of vise; 16 gage, 3 in.; ⅛-in. strip, 1½ in.; 3/16-in. strip, ¾ in.

SPRING WINDER — *The Torrington Manufacturing Co, Torrington, Conn.* Handles to ten turns of 0.080-in. wire. Tooling area of W-3001 is 34 x 38 in. Driven by a motorized variable speed transmission and V-belt drive; two sizes of slide feeds — one handling to 3½ in. of wire, second to 6¼ in.

PRESS CONVERTER—*F J Littell Machine Co, 4127 N Ravenswood Ave, Chicago 13.* Converts manually operated punch press to automatic operation. Hydraulic drive for feed and straightening.

KEEL BENDER PRESS — *Clearing Machine Corp, 6499 W 65th St, Chicago 38.* To hold keel and hull contour to minute tolerances, machine has walking beam exerting 1800 tons vertically and rocking on central axis. Beam can move horizontally 1½ in. right or left; max tilt is 30 in. in 20-ft length of beam.



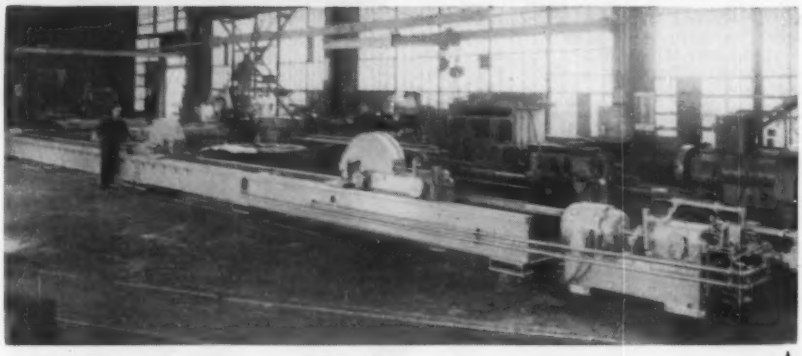


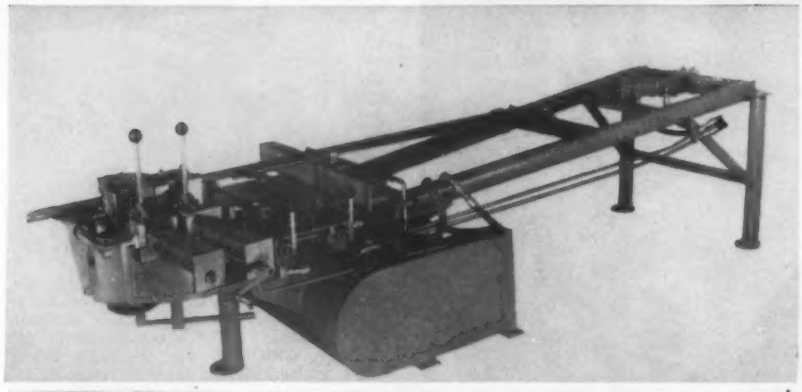
ELECTRONIC COUNTER — *Hufford Machine Works, Inc, El Segundo, Calif.* Overcomes effect of material hardness variations in stretch-forming operations. Mechanism employs two electronic counters.

STRETCH-WRAP MACHINE — *Hufford Machine Works, Inc, 1700 E Grand Ave, El Segundo, Calif.* Carousel model produces parts heretofore impossible by a single machine, as well as conventional parts from both extrusions and sheets up to 22" wide. With its 360° arm rotation around a stationary die and table it forms full circles. Forming operation can be complemented with following roller or wiper which operates simultaneously. This roller may be operated cw or ccw. Other operations include bulldozing, joggling, stretch-straightening, forming reverse bends and "S" curves.

TUBE STRAIGHTENER — *Sutton Engrg Co, Bellefonte, Pa.* Model 1½B designed with feeding and delivery equipment for straightening tubes from ½ to 3½-in. OD in varying lengths. Completely automatic cycle or operated manually from control pulpit.

METAL-SHRINKING MACHINE — *Calstate Engineering Service 8517 Santa Monica Blvd, Los Angeles 46, Calif.* Developed by Douglas Aircraft, machine has capacity of 65,000-lb pressure at jaw. Capable of shrinking 0.120-in. aluminum sheet, built with ample clearance to take various forms and contours.

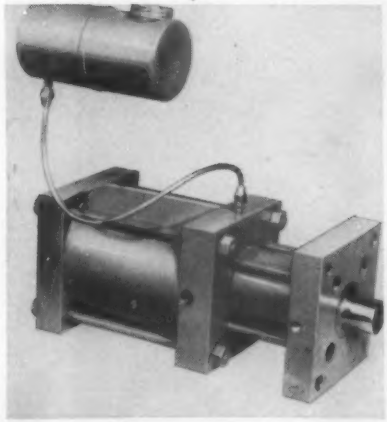




STRETCHER LEVELER—*The Medart Co, 3535 DeKalb Ave, St Louis 18.* Model SL50-8/4-45 has three speeds, will produce a 50-ton stretch continuously, and can be adjusted for lengths from 45 ft down to 10 ft in 30 sec.

RADIATOR TUBE MILL—*Kane & Roach Inc, Syracuse, NY.* Coil-holding reel, electric brazer, and stock reservoir for brazing end of coil to be run to leading end of new coil. Next unit is cold roll machine for forming elliptical lock seam tube with seam on edge, continuous tinning machine, roll straightener, and automatic cutoff machine.

TUBE-BENDER — *Pines Engineering Co, Inc, Aurora, Ill.* Horizontal, semi-automatic, for both clockwise and counter-clockwise operation. Handles up to 1-in. steel tube. 6- or 8-position turret, with 3-hp motor.

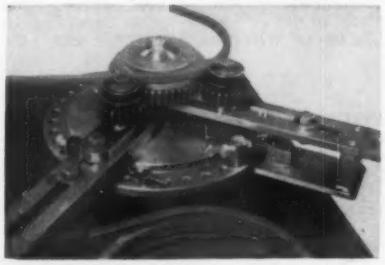


ROTARY BENDER—*Wallace Supplies Mfg Co, 1300 Diversey Parkway, Chicago 14, Ill.* No. 800-2 in., dual controls, will bend both right- and left-hand, and has clearances for bends on more than one plane. Capacity is 2½-in.-OD x 0.065-in.-wall steel pipe.

FORMING MACHINE — *Lund Products Div, Artys Sales Co, 11 Bway, New York 4, NY.* Curvette forms basic wire up to ¼-in. dia; strip metal to ¾ x ⅛ in.; thin-walled tubing to ⅜-in. dia. Roller is hardened and ground steel with needle bearings.

STRETCH-FORMING PRESS—*R A Lalli Co, 267 Madison Terrace, Bridgeport, Conn.* Press with shell die made of sheet steel ranging from 0.074 to 0.125-in. thickness and combining thermostatically controlled heat will stretch-form magnesium parts for aircraft to ⅛-in. thickness. Operator controls the amount of stretch by operation of hydraulic hand or motor-driven pump.

AIR POWER HEAD—*Air-Hydraulics, Inc, 202 Belden Rd, Jackson, Mich.* D 50 has 1-in. stroke, attains 5-ton pressure. Ram is 1½ in. in diameter, and adapted to mounting tooling, punches, etc.

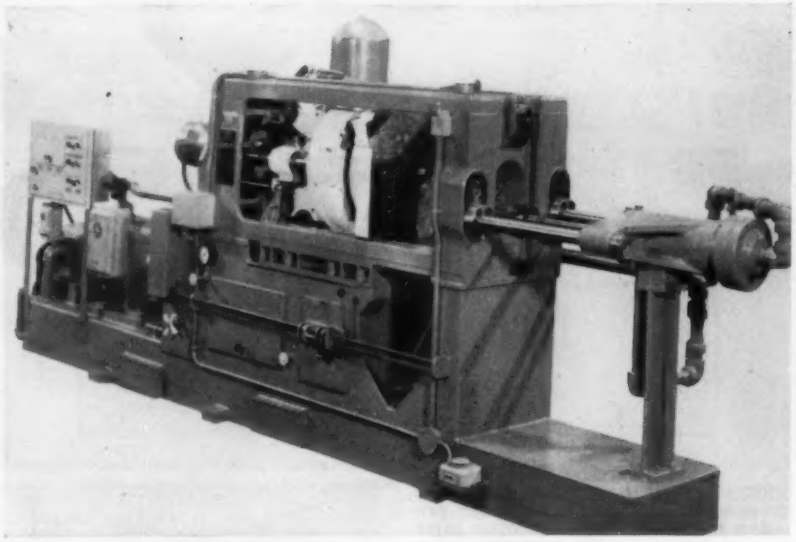


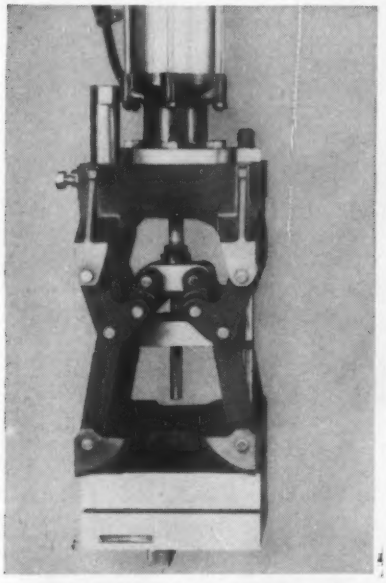
FORMING MACHINE—*Kilham Engineering, Inc, Plainfield, Mass.* The Curvit consists of a basic chassis in two sizes on which can be mounted mandrels contoured to fit specific stock on a definite radius or geared rolls which, with one setup, can form circles of many diameters. Slotted mandrels can be supplied for forming "U" bends.

DIE-CASTING MACHINE — *Lester-Phoenix, Inc, 2711 Church Ave, Cleveland.* Model HP-1-C casts up to 4⅞ lb of aluminum or proportionate weights of magnesium or brass; takes dies up to 25 in. wide or 22 in. high.

DIE-CASTING MACHINE—*Hydraulic Press Mfg Co, Mt Gilead, Ohio.* From 200 to 1000 tons for cold-chamber models, and 100 to 600 tons for gooseneck types. Injection end is self-contained unit with pump, motor, and reservoir. Speed control operating valve allows variable acceleration.

DIE-CASTING MACHINE — *Doehler-Jarvis Div, Nat'l Lead Co, Toledo, Ohio.* Weighs 250 tons, has 72 in. between framework bars, and handles dies weighing 50 tons. Can make 75-lb aluminum, or 200-lb zinc castings. Production of 75-lb aluminum castings is 30 per hr. Two 12,000-lb reverbatories are included.





DIE-CASTING MACHINE — *DCMT Sales Corp, 164 Duane Street, New York 13, NY.* DCMT IMP/96 incorporates independent die unit. Cycling speed is 800 to 1,000 shots per hour.

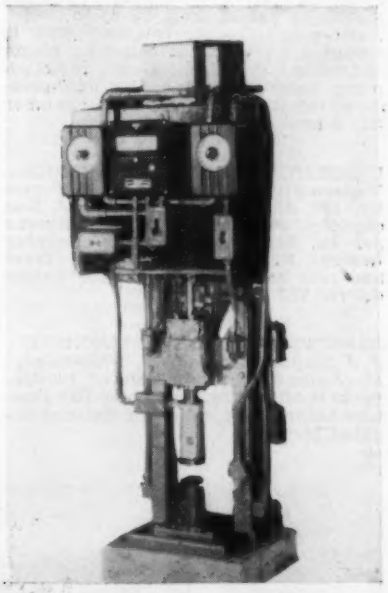
DIE-CASTING MACHINE—*H L Harvill Mfg Co, Corona, Calif.* Model HD-303 is adapted to casting aluminum alloys at high speed from single or multiple-cavity die. High-pressure oil hydraulic system supplies operating and injection power with pressures to 11,800 psi. Platens are opened on all sides to allow full access. Machine prevents molten metal from being injected unless dies are closed and locked under 300 tons.

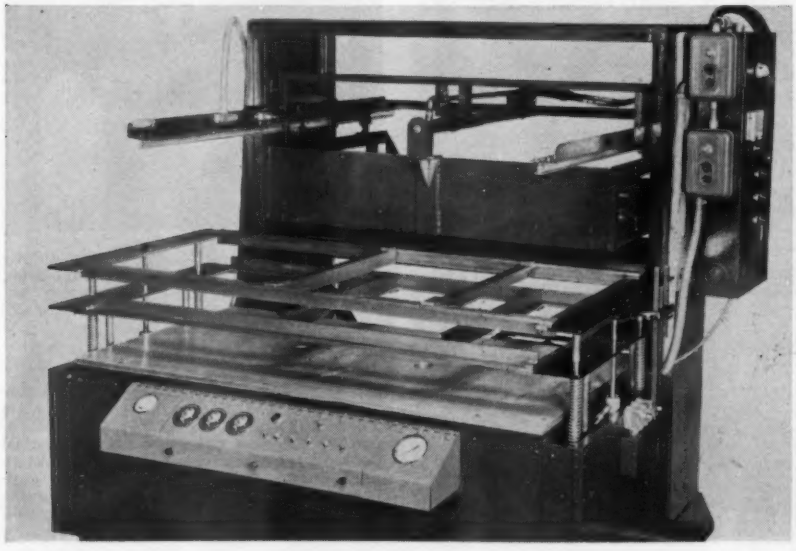
MAGNETIC GRATE—*Eriez Mfg Co, Erie, Pa.* Series of stainless steel cylinders covering Alnico magnetic elements, spaced and held in position by thin welded stainless strips. Parallel with cylinders and centered between them are ½-in.-sq steel grid bars, also welded to the strips.

HEATING CHAMBER—*The Hydraulic Press Mfg Co, Mt Gilead, Ohio.* Standard on HPM 9, 16, 32, and 60-oz plastics injection molding machines; designed to increase plasticizing capacity. Heat requirements are lowered 100F and injection pressures reduced 3000 psi.

VACUUM FORMING—*Auto-Vac Co, 2116 Post Rd, Fairfield, Conn.* Automatic machine softens sheet as it pulls it over mold, draws vacuum, allows set, releases with air jet.

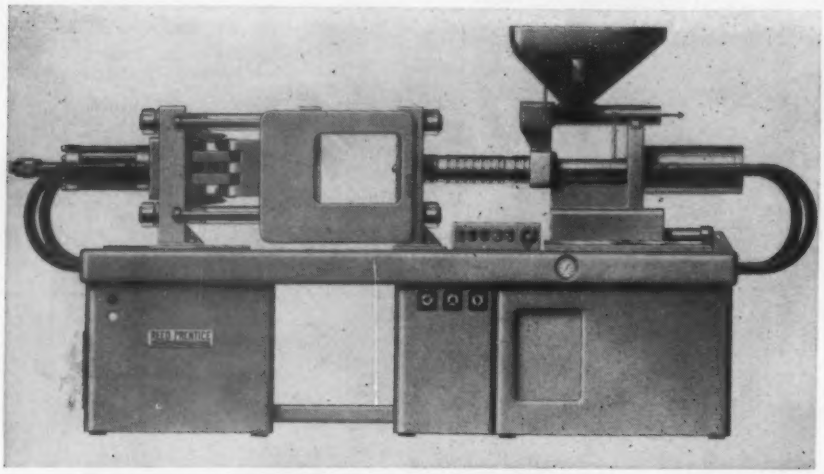
MOLDING PRESS — *E W Bliss Co, Canton, Ohio.* Plastic preforms are loaded manually into transfer cavity of 500-ton hydraulic press, moved by transfer ram into die cavity. Pressure from main and transfer rams are maintained until proper cure in closed die has been effected.





POTTING PRESS — *Electro-Snap Switch & Mfg Co, 4218 W Lake St, Chicago 24.* Features are: interchangeable heads, molding speed of 2 per sec, melting temperatures from 115 to 600 F with close plasticizer control. Accepts granular or preformed shot from front cavity or rear hopper.

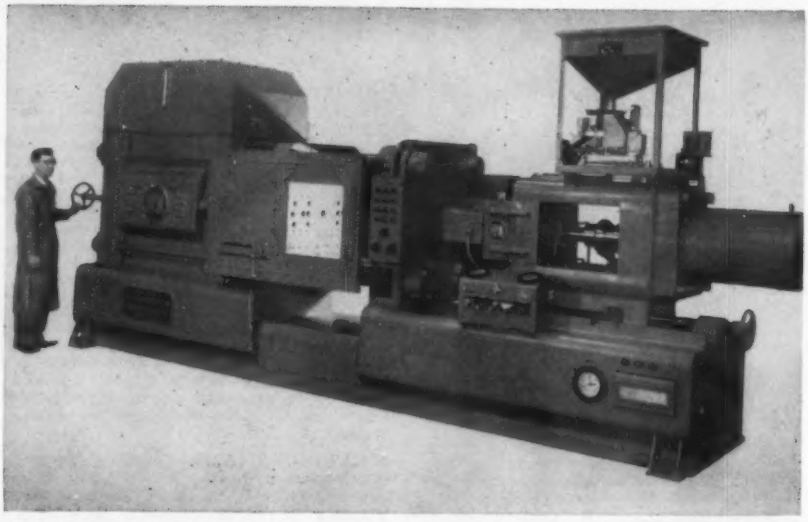
VACUUM FORMING MACHINE — *Tamco Industries, Inc, 290 Broadway, Huntington Station, LI.* Model HV-30-60 is reported to be the first completely self-contained machine for high-speed vacuum forming of thermoplastic films and sheets. It has a 30x60-in. platen. Plastic sheets with a maximum dimension of 27x57 in. can be handled. The Chromalox strip heater has three banks operated in any combination to provide temperature range to 1150 F.



INJECTION MOLDING MACHINE—*Reed-Prentice Corp, Worcester 4, Mass.* The 175T-4/6 oz injection molding machine, designed for fast, continuous molding of small thermoplastic items, develops 175 tons mold clamping pressure through its double shear link mechanism. Mold stroke is adjustable from 5 to 8 in. Machine cycle time of 6 sec permits up to 600 shots per hour.

PLASTIC-INJECTION MOLDING MACHINE — *Reed-Prentice Corp, Worcester 4, Mass.* Model 300T-12/16 has a 10-sec cycle which boosts molding speed to 360 shots per hr. In actual production a stuffing arrangement permits shots of 16 oz or more through multiple stroke. Newly-designed heating cylinder plasticizes up to 115 lb of thermoplastic material per hour. An adjustment in the link provides mold-clamping-stroke adjustment from 7½ to 12½ in.

FEED HOPPER—*Reed-Prentice Corp, Worcester 4, Mass.* Reed-Weigh precision hopper for Reed-Prentice injection molding machines weighs each charge of thermoplastic material before depositing it into injection chamber, is said to eliminate flash caused by overpacking and to produce more accurate parts.

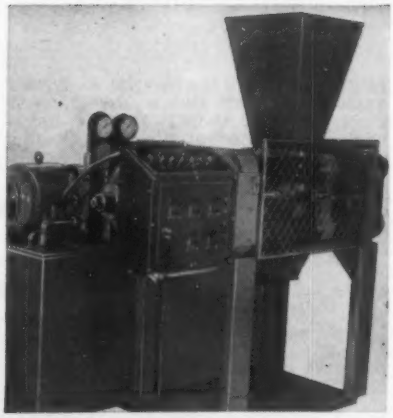


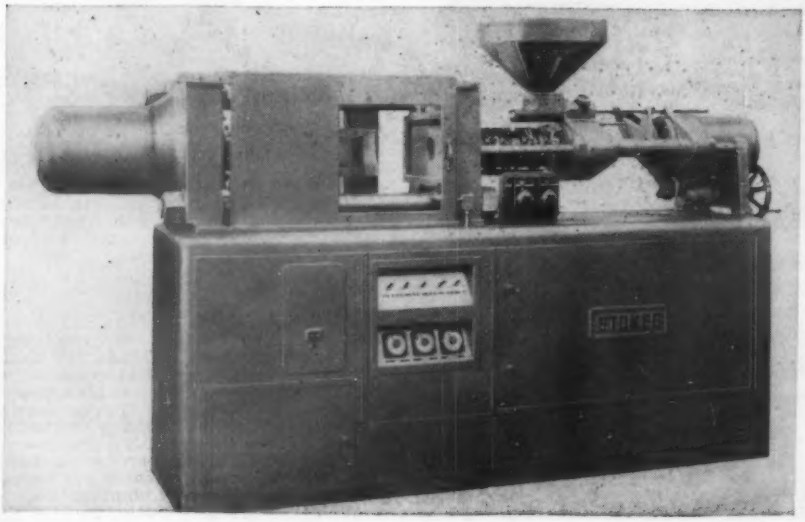
INJECTION MOLDING—*The Hydraulic Press Mfg Co, Mt Gilead, Ohio.* 20-28-oz range; 60% higher injection speed; hp raised from 30 to 50; automatic-weigh feeder. Injection unit is mounted on ways, actuated by single hydraulic cylinder. Dual injection pump permits two-speed or dual-pressure injection. Plasticizing chamber has 3 heat zones.

INJECTION MOLDING MACHINE—*Watson-Stillman Co, Div H K Porter Co, 200 Aldene Rd, Roselle, NJ.* 5-oz capacity, will plasticize 80 lb of styrene per hr. Straight hydraulic clamping design. Front-controlled, with front and rear safety gages. 2 vane pumps deliver 17.7 and 2.5 gpm.

INJECTION-MOLDING MACHINE—*F J Stokes Machine Co, Philadelphia 20.* Automatic production of plastics parts is offered by 4-oz model 700. Positive automatic ejection of finished degated pieces.

AUTOMATIC INJECTION MACHINE—*The Hydraulic Press Mfg Co, Mount Gilead, Ohio.* 6- to 8-oz-capacity; cycles to 400 times per hour on small, thin-walled products. Straight-line hydraulic mold clamp has fast closing and opening speeds and automatic slow-downs prior to mold contact. Daylight opening is 20 in., clamp travel 10 in., max mold-mounting space 15x20½ in.; clamp capacity of 150 tons.





PREFORMING PRESS—*Logan Engrg Co, Hydraulic Div, 4901 Lawrence Ave, Chicago 30.* Electronic automatic control system; pressures from 0 to 125 tons; preform sizes to 25 sq in.

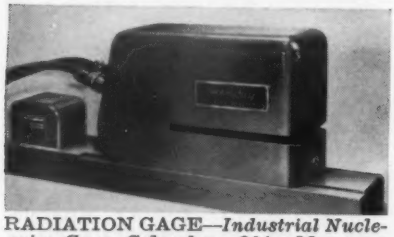
INJECTION PRESS — *Alexander Saunders & Co, 95 Bedford St, New York 14.* Model WP-24 for pattern reproduction has pressure range to 1000 psi and inceased capacity to 138 cu in. per shot. Hydraulic pressure ram forces wax from movable cylinder through injection nozzle at controlled temp and pressure.

American Machinist
1955
PRODUCTION PREVIEW

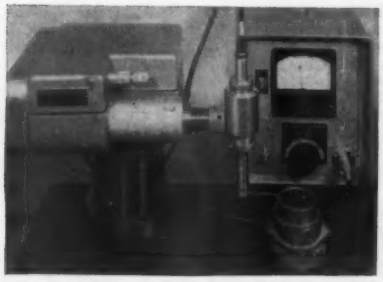
LAYOUT AND INSPECTION

summarized from descriptions published during 1954

ELECTRONIC MICROMETER — *Brown & Sharpe Mfg Co, Providence 1, RI.* Combination of standard electronic amplifier and gage head cartridge with indicating bench micrometer forms electronic micrometer for measuring small parts to 0.00001 in. with continuously variable magnification from 1800 to 18,000X. Retracting lever permits rapid placing of work on adjustable-height table. Measuring pressure is adjustable from 3 oz to 2½ lb at .0001-in. sensitivity.



RADIATION GAGE—*Industrial Nucleonics Corp, Columbus, Ohio.* Measures thickness of strip on small cold-reduction mills, has range of 0.00005 to 0.060 in. Positioned by leadscrew mechanism which enables it to traverse strip to 6 in. in width.



PROFILOMETER PILOTOR — *Micrometrical Mfg, Co, 345 Main St, Ann Arbor, Mich.* Linear pilot for use with G-type profilometer tracers on hard-to-reach surfaces. Unit supports tracer and provides vibrationless straight-line movement from 1/32 to 1¼ in.

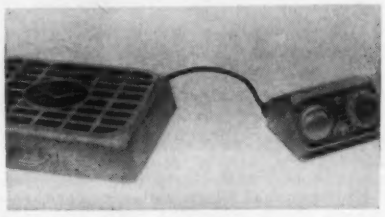
MEASURING INSTRUMENT—*Engis Equipment Co, 310 S Michigan Ave, Chicago, Ill.* Electronic machine for measuring the roundness of parts has radial magnification from 50 to 10,000. Part is held stationary with spindle-holding stylus and pick-up.

ELECTRONIC GAGE—*Federal Products Corp, 1144 Eddy St, Providence 1, RI.* Measures ID and stamps size of refrigerator cylinder block bores. Cylinder blocks are stamped into 16 categories, each equal to 0.0001 in., plus oversize and undersize. The speed depends upon operator who manually selects workpieces according to classifier lights or stamped markings.

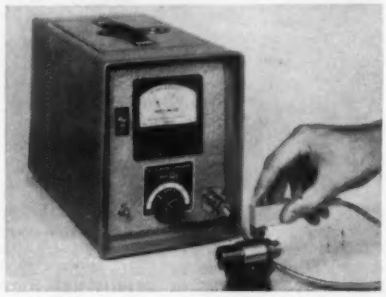
OPTICAL PYROMETER—*Pyrometer Instrument Co, Inc, Bergenfield, NJ.* Portable; measures, to 1300 F, a target of 0.001-in. diameter.

AIR GAGE—*Federal Products Corp, 1144 Eddy St, Providence, RI.* Dimensionaire with 5000 to 1 magnification has range of 0.0015 in. Each dial graduation equals 0.00002 in.

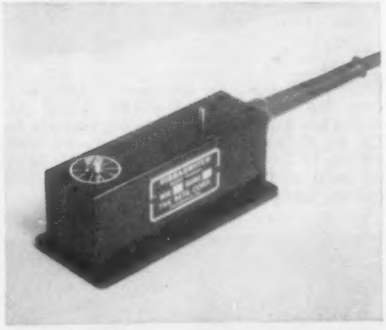
AUTOMATIC INSPECTION GAGE—*Industrial Scientific Co, 34 West 33rd St, New York 1, NY.* Multiple feeler probes with tip radii of 0.001 in. and electric response coupled with graph recording. Magnification ratios from 10:1 to 800:1.



ELECTRONIC SCALE—*Control Cells Corp, Suite 201, 511½ N Hillside, Wichita 2, Kansas.* Weighs only 45 lb, but has 40,000-lb weighing capacity and is no larger than a briefcase. Sensing element is tubeless electric circuit. Dial may be installed for remote reading.



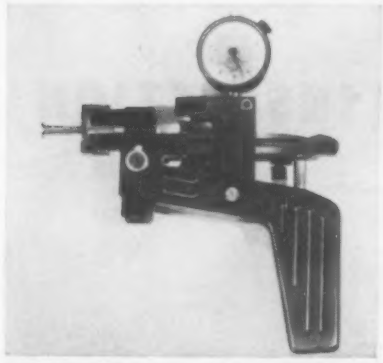
SURFACE ROUGHNESS — *Micrometrical Mfg Co, 345 S Main St, Ann Arbor, Mich.* QA Amplimeter, for use with Profilometer, indicates either rms or arithmetical average in mu-in. Portable unit is insensitive to mechanical shock or vibration, has a 30-second warmup, and is unaffected by normal temperature changes or line voltage fluctuations from 90 to 130 v.



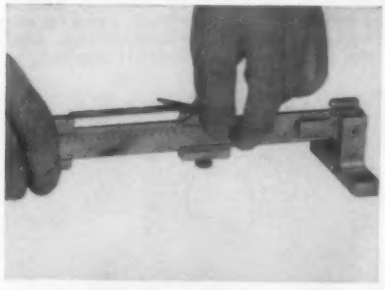
VIBRASWITCH—*Beta Corp, Box 8625, Richmond 26, Va.* Used for vibration measurement or as monitoring switch for warning when vibration exceeds preset amount. Range is 0 to 2G, or 0 to 800 ipss.

PRESSURE PICKUPS—*Dynamic Instrument Co, Cambridge 42, Mass.* Dynamic pressure indicating and recording devices have diaphram diameters from ¼ to 1 in, for pressure ranging from 1 to 3000 psi. Pickups can be used at −65F to +350F.

LAYOUT and INSPECTION—measuring equipment

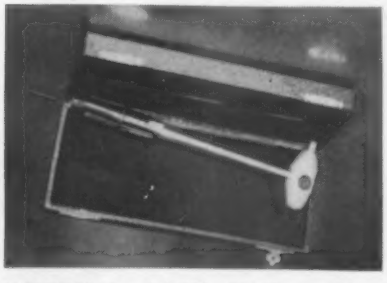


MEASUREMENT GAGE — *Mueller Laboratory, 239 W Maple Ave, Monrovia, Calif.* Pistol-grip unit measures 0-ring grooves, deep holes, tapers, recesses, inside spherical radii, and out-of-round areas. Will measure to 0.0005 in.

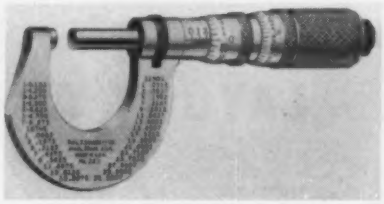


CENTER-MIKE — *Sorensen Center-Mikes, Inc, 264 Kossuth St, Bridgeport, Conn.* Center distances to 0.0005-in. tolerances regardless of hole sizes. For production gaging of small, flat and irregular metal components having center distances ranging from 0.040 to 12.4 in.

LENGTH GAGE—*George Scherr Co, Inc, 200 Lafayette St, New York 12.* External and internal measurements to 120 in. Steel scale and 0.001-in. vernier which is 2,450 in. long, adjustable. May be used as master or check for setting mikes, snap gages, and so on.

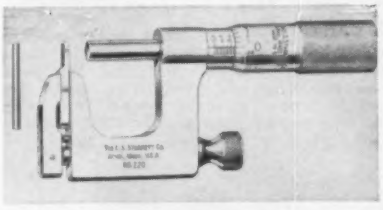


INTERNAL GAGE—*McGlynn Hays Industries, Inc, Belleville 9, NJ.* Opti-Mike uses two-point bore-diameter measuring, in ranges from 0.8 to 6 in. Direct readings to 0.00025 in.

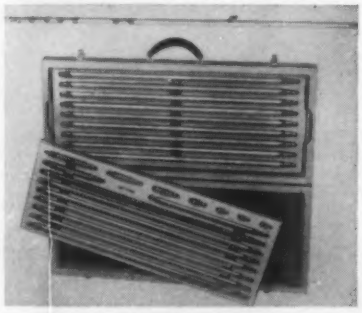


MICROMETER CALIPER—*L S Starrett Co, Athol, Mass.* Automatic spindle control; reads direct in ten-thousanths of an inch.

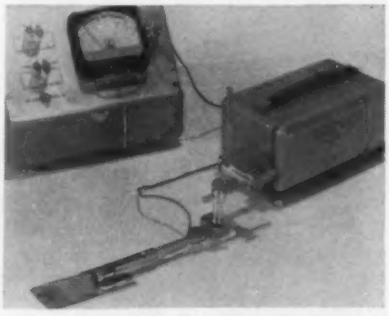
MICROMETER CALIPER—*The L S Starrett Co, Athol, Mass.* Friction-control and direct-feel are combined. Number of sizes and styles.



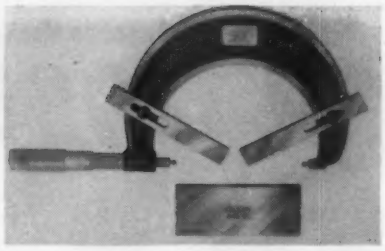
MICROMETER — *L S Starrett Co, Athol, Mass.* One-in. size, reading in thousandths, has vise frame to hold interchangeable anvils for wide variety of measurements.



INSIDE MICROMETER — *Brown & Sharpe Mfg Co, Providence 1, RI.* Readings from 6 to 30 ft are possible with special micrometer head and 25 extensions calibrated to nearest ten-thousandth.

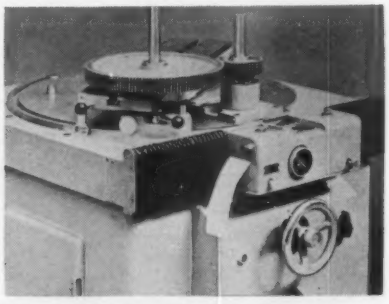


TRACER MOTOR DRIVE — *Brush Electronics Co, Equipment Div SP, 3405 Perkins Ave, Cleveland 14, Ohio.* Provides mechanical movement of Surfindicator pickup along surface being inspected. Reciprocating stroke, with length adjustable from 2⅞ to less than 1/16 in., permits wide range of measurements. Stroke speed is ⅛ in. per second.



BALL MICROMETER—*AA Gage Co, 356 Fair St, Detroit 20, Mich.* Has opposing ball, accurate to 0.0001 in. as an integral part. Standard ball sizes are ⅛ to ¼ in. in 1/64-in. increments.

BENCH MICROMETER — *George Scherr Co, Inc, 200 Lafayette St, New York 12.* Reads in 0.0001 in directly on 1-in.-dia thimble. Type 40 G has range 0 to 0.400 in. Type 40 H has non-rotating plunger spindle for 11 sets of anvils.



GEAR TESTER—*Kurt Orban Co, 205 E 42nd St, New York 17, NY.* Klingelnberg PZ 375 checks all gears, giving cumulative and individual errors by two-flank rolling test and single-flank test. Center distances, tooth shapes, base circles, pressure angles, pitch, spacing, and tooth angles can be recorded.

ZINC, TIN GAGE—*Industrial Nucleonics Corp, 1205 Chesapeake Ave, Columbus, Ohio.* AccuRay measures tin and zinc plated on steel, either electrolytically or by hot-dip process. Model RBM is a non-contacting, beta-reflection gage which handles tin plating in the range of ¼ lb per bbl to 1 lb per bbl and electrolytic zinc from 0.1 to 3 oz per sq ft.

SMALL HOLE GAGE—*New Standard Div, U S Expansion Bolt Co, York, Pa.* Measures internal diameters of holes from 0.025 to 0.130 in.; guaranteed accurate to within 0.0005 in. over entire range.

MICROMETER—*Karl A Neise, 404 Fourth Ave, New York 16, NY.* Accurate to tenths. Said to eliminate errors due to paralleax.

gages and comparators—LAYOUT and INSPECTION

AIR GAGE—*The Sheffield Corp, Dayton 1, Ohio.* Multi-column; inspects 12 internal diameters in transmission valve body. Two spindles, step design, have two sets of orifices.

AIR GAGE—*The Sheffield Corp, Dayton 1, Ohio.* Checks true center distance between crankshaft and piston-pin bore of a connecting rod within ±0.0005 in.

AIR GAGE—*Sheffield Corp, Dayton 1, O.* Six engine-piston dimensions are checked by air-ring assembly; skirt dia, top and bottom; taper; average pin-bore dia (two readings); and height between centerline of pin bore and dome top.

AUTOMATIC GAGE—*Sheffield Corp, Dayton 1, Ohio.* Simultaneous inspection of ten dimensions on automobile piston at rate ranging from 400 to 800 pistons per hr. Incorporates a pneumatic and electrically timed loading mechanism which carries piston into and out of gaging station. Colored lights indicate whether points of inspection are oversize, undersize, or within tolerance.

PRODUCTION GAGE—*The Sheffield Corp, Dayton 1, Ohio.* Inspects four dimensions simultaneously on carrier body of automatic transmission. Dimensional quality of part is indicated by master light and four individual signal lights.

AIR GAGES—*Sheffield Corp, Dayton 1, Ohio.* Radial-play gages for miniature and regular-size bearings. Accuracy is four rejections in 2000 matchings of inner and outer races.

PLANETARY GAGE—*Sheffield Corp, Dayton 1, O.* Colored lights indicate size and range on 13 dimensions of rear planetary carrier at 600 to 800 per hr.

AIR ELECTRIC GAGE — *Federal Products Corp, 1144 Eddy St, Providence 1, RI.* Operates set of tolerance lights. Dimensionair dials indicate which dimension of polished parts is off and how much.

SHALLOW-DIAMETER GAGE—*Federal Products Corp, Providence 1, RI.* Model 88P-10 is a gage made of stock parts in lengths varying from 3 to 42 in., adjustable for versatility. Construction is tubular and unit is light, strong, and easy to use.

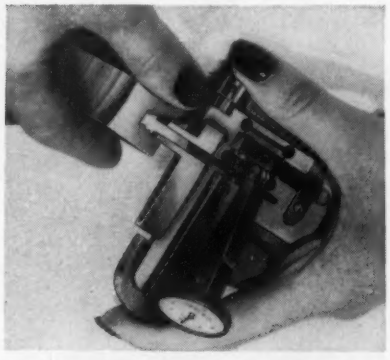
BORE GAGE—*Sheffield Corp, Dayton 1, Ohio.* Gaging element is Plunjet air cartridge that is self-centering, with 1000-to-1 ratio. Gage is set with gage blocks and standard calibrator.

AIR GAGE—*The Sheffield Corp, Dayton 1, Ohio.* Inspects squareness of automobile cylinder bore with axis of crankshaft bore. Consists of chrome-plated gaging spindle connected to four-column Precisionaire and cylindrical bar for locating axis of crankshaft bore.

AIR GAGING—*Sheffield Corp, Dayton 1, Ohio.* Gaging spindle is designed to simulate dovetail root form. Spindle contains a single Balljet and pressure pad arrangement.

GAGE-SPINDLE KIT—*Sheffield Corp, Dayton 1, Ohio.* Balljet adjustable spindle kit has eight tapered cores, four sets of gaging anvils, size-setting fixture, calibrator, and four handles and hoses.

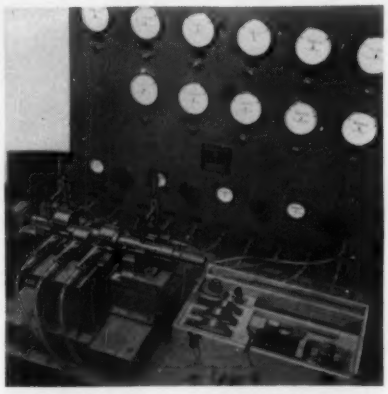
GAGING INSTRUMENT — *Sheffield Corp, Dayton 1, Ohio.* Multichek electrical multiple unit inspects 7 critical dimensions simultaneously on a shell body, with operator having only to load and unload the part.



SNAP GAGE — *Federal Products Corp, 1144 Eddy St, Providence, RI.* Portable adjustable unit measures widths of Christmas-tree serrations in jet-engine compressor-rotor disk; measures all three rows of blade serrations regardless of angles. Uniform gage pressure is independent of operator.

SNAP GAGE—*Federal Products Corp, 1144 Eddy St, Providence 1, RI.* Single-purpose indicating units with adjustable upper contacts. Model 1340 P-20 has capacity of 0.062 to 0.625 in.; 1340 P-21 capacity of 0.625 to 1.250 in.

GAGING MACHINE—*Sheffield Corp, Dayton 1, Ohio.* Inspects seven dimensions of a piston, rejects unacceptable pistons, and segregates the acceptable ones at a rate of 2200 per hour. Machines have two stations.



AIR GAGE—*Federal Products Corp. 1144 Eddy St, Providence 1.* Checks concentricity and squareness for various-size cylindrical housings. Model H-159. Another model, H-160 checks eleven dimensions on crankshafts.

GAGE—*Federal Products Corp, 1144 Eddy St, Providence 1, RI.* Model 205 unit satisfies two gaging requirements—location of hole with respect to pre-determined reference; concentricity of hole with finished hole.

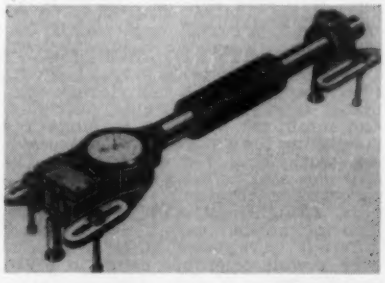
GAGE—*Federal Products Corp, 1144 Eddy St, Providence 1, RI.* Model 99P adjustable groove gage measures ID of ring grooves. Has wide capacity; adjustable to measure diameters between 0.725 and 2.625 in.

GEAR GAGE—*Federal Products Corp, 1144 Eddy St, Providence 1, RI.* Model 202P inspects pitch diameters of spur, helical gears, and splines. Cylindrical gaging contacts are used; upper one is free to swivel while adjusting it to master.

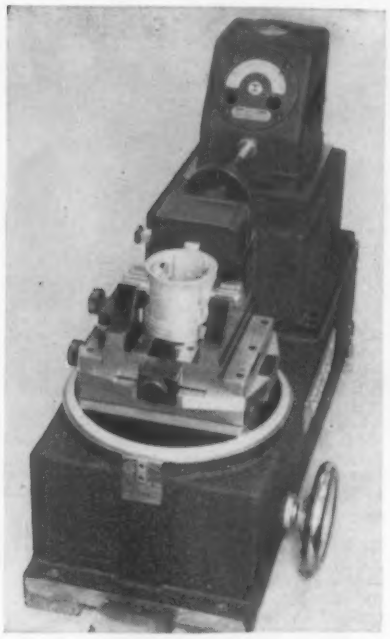
INDICATING SNAP GAGE—*Federal Products Corp, 1144 Eddy St, Providence 1, RI.* Measures crankshafts or similar work where projection requires longer reach than usual. Can be made to any single dimension between 1.875 and 3.00 in.

GAGE HEAD—*Federal Products Corp, 1144 Eddy St, Providence 1, RI.* Air-Probe for use with Dimensionair air gage can be mounted on a variety of fixtures and applied to regular Federal gages.

AIR GAGE—*The Sheffield Corp, Dayton 1, Ohio.* Inspects jet engine airfoil strip stock for thickness, width, and camber at a rate of 300 fpm. Instrument is 33 in. wide, 31 in. deep, and has a 12-column Precisionaire.



UNIVERSAL GAGE—*Federal Products Corp, 1144 Eddy St, Providence 1, RI.* Model 88 P-10 universal ID-OD gage for gaging shallow bores and shoulder diameters. Length of gage from 6 to 32 in. in 3-in. increments.



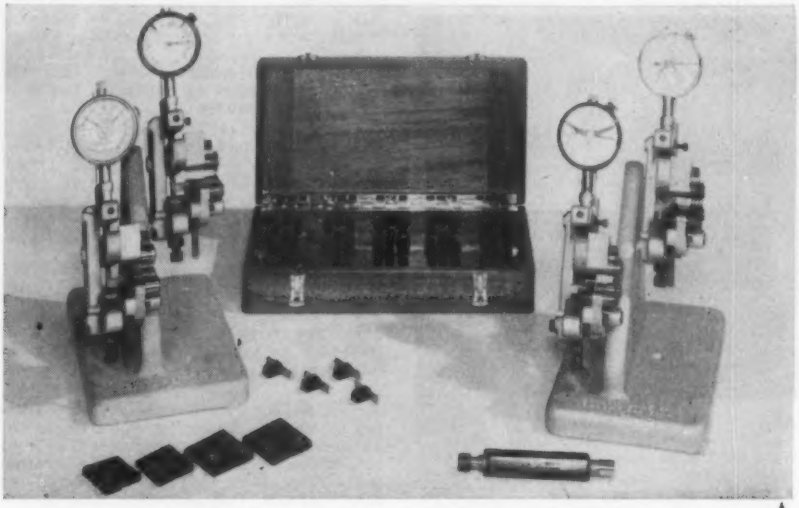
AIR-OPERATED GAGE—*Taft-Peirce Mfg Co, Woonsocket, RI.* Inspects the skirt contour of pistons for 6-cyl engines. Gaging fixture and centralizing table are mounted on an index table, graduated in 5° increments. Tungsten carbide measuring contact is reed-mounted and horizontally adjustable.

AIR BORE GAGE — *The Sheffield Corp, Dayton 1, Ohio.* With this kit, any size hole between 3 to 12 in. in dia can be quickly and accurately inspected for size, taper, and out-of-roundness.

STRIP CLASSIFIER—*Industrial Nucleonics Corp, Columbus, O.* Automatic strip and plate sorter works with Accu-Ray no-contact gage. Source-detector unit, recording console, and classifier make up system.

ECCENTRICITY MEASUREMENTS —*Federal Products Corp, 1144 Eddy St, Providence 1, RI.* Eccentricator eliminates need for observing maximum and minimum indicator readings and computing the difference when measuring workpieces for eccentricity. The unit can also be used in special applications for checking runout, squareness, straightness, and wobble, while ignoring normal variations in size of different workpieces. It is adjustable over a wide tolerance range of 0.0001 to 0.035 in.

SNAP GAGES — *Reliant Industries, 4947 Firestone Blvd, South Gate, Calif.* Deep-throat allows work from 0 to 3 in. high. Second size covers 3 to 6 in. Gage anvil may be removed.



PORTABLE BENCH CENTER—*Acme Industrial Co, 200 N Laflin St, Chicago 7, Ill.* Length of 18 in. with known flat surface accurately machined and checked within 0.0005-in. max. Designed to accommodate magnetic or standard indicators directly on the bed area.

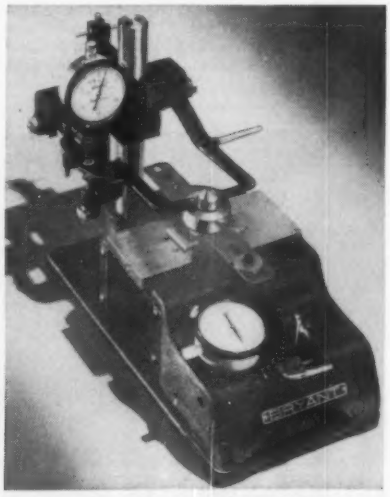
THREAD GAGE LINE — *Bryant Chucking Grinder Co, Springfield, Vt.* Line of internal and external thread gages, both portable and bench models, built on principle of expanding master plug for checking internal threads, or contacting master ring for external threads.

RADIAL PLAY GAGE—*Federal Products Corp, 1144 Eddy St, Providence 1, RI.* Dead-load pressure is used to give constant pressure on races. Air is used to relieve weight pressure while inserting bearing. Bearings ranging from 1 to 5-in. outer-race OD.

AUTOMATIC SORTING GAGE — *Moore Products Co, Philadelphia.* Jets of air measure wall and base thickness of copper-clad bullet jacket cups in one operation. Pneumatic cylinder operating at 2500 pieces per hour brings cups into gaging position.

MICROMETER GAGE—*Acme Industrial Co, 200 N Laflin St, Chicago 7.* Model 127 directly reads end diameters of chamfers up to 1 in. from 90° to 127° included angle. Also computes chamfer depths.

THREAD COMPARATORS—*Johnson Gage Co, 534 Cottage Grove Rd, Bloomfield, Conn.* Check sizes from 1/16-27 through 1 in.-11½. Pitch diameter, cumulative size, and major and minor diameters of Dry-seal taper threads are inspected.

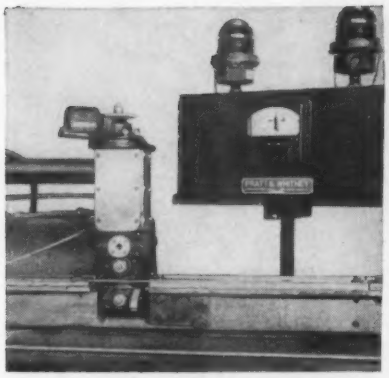


THREAD GAGE ATTACHMENT—*Bryant Chucking Grinder Co, Springfield, Vt.* Checks squareness of face of external and internal threads. Face diameters from ¾ to 7 in. Indicator gives direct reading of total face runout with axis. Can be arranged to check either upper or under surface.

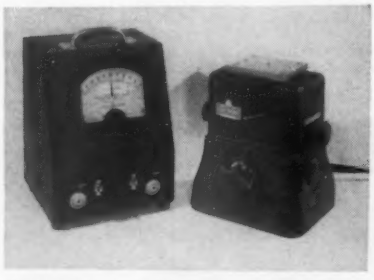
ELECTRIC GRINDING GAGE—*Federal Products Corp, 1144 Eddy St, Providence, RI.* Arnold gage frame and caliper with Electricator, plus power or control unit. Gage rides work during cylindrical grinding and controls wheelhead-feeding mechanism which runs at rapid rate until diameter reaches between 0.0005 and 0.004 in. of final size. At changeover, wheel is switched to slow spark-out feed.

SMALL-HOLE GAGE—*B C Ames Co, Waltham, Mass.* Two-point contact unit for quick inspection of small holes for size, taper, and roundness. Instrument automatically centers itself.

REVERSIBLE GAGES—*John Bath & Co, Inc, 30 Grafton St, Worcester 8, Mass.* Line of thread and cylindrical gages made from selected steel.



CENTERLESS GRINDER GAGE—*Pratt & Whitney, Div Niles-Bement-Pond Co, West Hartford 1, Conn.* Model D Electrolimit continuous gage for continuous gaging of precision-ground bar stock. Adaptable to any ½-in. range such as 0.2500 to 0.7500 or 0.500 to 1.0000 in.

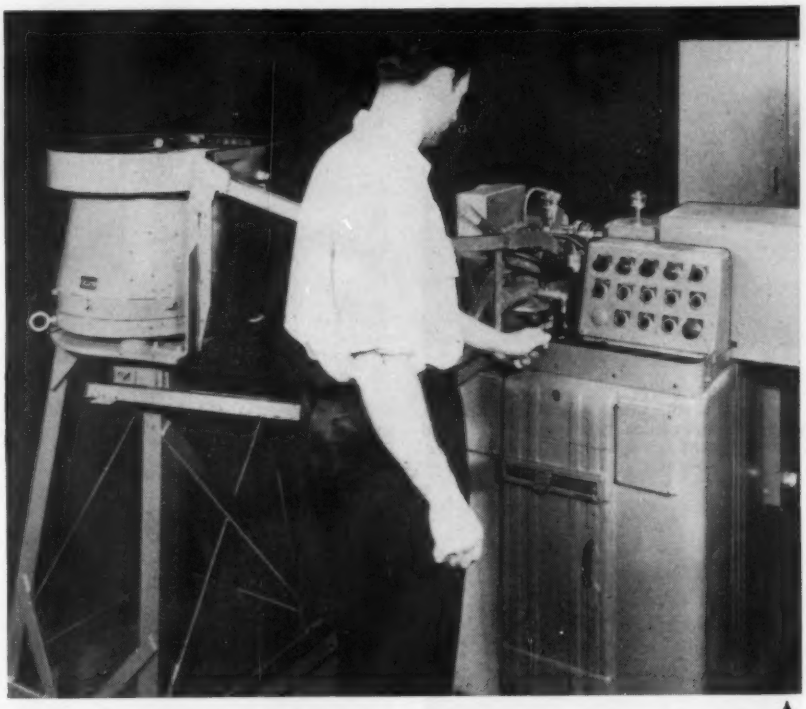


INTERNAL COMPARATOR—*Pratt & Whitney, Div, Niles-Bement-Pond Co, West Hartford, Conn.* Electrolimit Model D checks internal diameters from 1/16 to ¼ in. Can be used for checking roundness and taper. Furnished with instrument cabinet containing DDU meter calibrated 0.001 in. full scale across its 4½-in. dia.

PIN GAGE BLANKS—*Huron Machine Products, 6252 Monroe Blvd, Dearborn, Mich.* Line of reversible blanks in AGD plain and thread lengths is available in approximately 1/64-in. sizes. Blanks are manufactured from Graph-Mo oil hardening tool steel, hardened and drawn to 62-64 R, with closely held center-to-center distances.

SCREW CHECKING DEVICE—*Holladay Tool Research, Dept 4, 7430 N Hurst St, Portland 14, Oregon.* The Screw-Checkr incorporating screw-shear, is a device for checking small screws with fine threads for length, body, size, thread count, tap series, body drill, tap drill. It is a screw holder, cutter, thread straightener, body straightener, and screw alteration tool.

GAGE SET MASTER—*Boice Manufacturing Co, Staatsburg, NY.* Adjustable dial bore gage set master. Built-in equalizer positions gage so it is only necessary to rock it in one plane to establish zero reading on indicator.



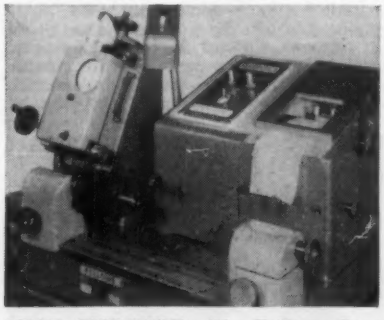
GEAR INSPECTION MACHINE—*National Broach & Machine Co, 5600 St Jean Ave, Detroit 3.* Red Ring unit for automated production lines makes four checks for size and helix angle or size only. Will shut off shaving machine after predetermined number of rejects.

ANALYTICAL COMPARATOR—*Illinois Tool Works, 2501 N Keeler Ave, Chicago 39.* Combination of all essential gear checks. Table motion parallel to axis of gear checks lead; perpendicular motion checks involute or tooth profile; in-and-out motion checks spacing.

MASTER COMPARISON SLIDES—*Elgin National Watch Co, Abrasives Div, Elgin, Ill.* Inspection of diamond abrasives, for grading and purity. Microscope permits examination of particles ranging from 1 micron to 100 mesh.

DIE CHECK—*Tietzmann Tool Corp, Englewood, Ohio.* Used with standard dial indicator. Will check side walls of die for squareness and imperfections.

GEAR INSPECTION — *National Broach & Machine Co, 5600 St Jean Ave, Detroit 13.* Model GSC automated unit loads, speeds spur and helical gears for sound test, and unloads gears to conveyor line. Gear to be tested is in mesh with master gear.



GEAR CHECKER—*The Fellows Gear Shaper Co, Springfield, Vt.* Provides measurement designated as "composite check," by which all gear errors are measured in combination. Master gear is mounted on arbor in movable carrier and rotated by handwheel or motor. Center distance variations are detected by electrical sensing device; amplification can be 200 to 1, 400 to 1, or 800 to 1. Charting paper roll rate of travel can be set for 5 or 10 ipr of the master. Will measure gears of 20 pitch and finer up to 4-in. pitch diameter, external or internal.

MICROFINISH COMPARATOR—*Baptist Machine Co, Ludlow St, Stamford, Conn.* Has 22 different established flat-surface-roughness specimens used for visual and tactual comparisons ranging from 2 to 500 mu-in., conforming to ASA standards.

PLUG GAGES—*The Van Keuren Co, 176 Waltham St, Watertown, Boston, Mass.* Chrome carbide taper insert plug gages are available in sizes from 0.500 to 1.500-in. dia. They are manufactured to standard X, XX, and Y tolerances, and gage finish will average 0.5 rms.

GEAR SELECTOR — *Michigan Tool Co, 7171 E McNichols Rd, Detroit 12.* Segregates gears into over, on, and under by checking against two masters. Fully automatic.

GEAR CLASSIFIER—*Michigan Tool Co, 7171 E McNichols Rd, Detroit.* Separates gears into acceptable, salvageable, and non-salvageable categories. May be based on one or more of several sizing factors. Conveyor model handles wide-face and cluster units. Gears enter from left side on continuous-belt conveyor.

METAL COMPARATOR — *General Motors Corp, 1775 Broadway, New York 19.* Thermo-electric instrument for sorting mixed metal parts with varying alloy content can also detect chills in castings, measure thickness of paint films and metallic plating.

GAGE BLOCKS—*Webber Gage Co, 12900 Triskett Rd, Cleveland 11, Ohio.* Croblox from chrome-carbide; noncorrosive and anti-tarnishing properties. Less costly than tungsten carbide gage units.

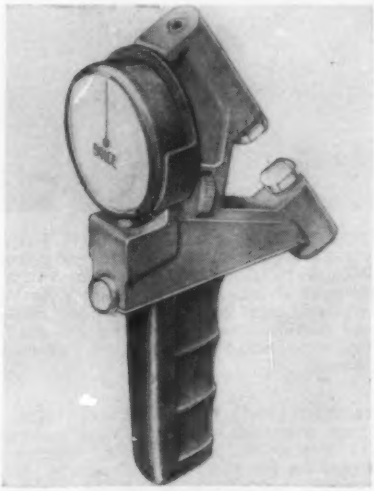
GAGE BLANKS—*A G Davis Gage & Eng Co, 21435 Dequindre Rd, Dept A-1, Hazel Park, Mich.* Flush pin, standard barrel and bar design, are finished complete except for grinding range and step dimensions.

GEAR ROLLING FIXTURES—*Michigan Tool Co, 7171 E McNichols Rd, Detroit 12, Mich.* Two models: one, with an overarm, checks gears having integral shaft. Other checks external gears; it has an adjustable center distance and spring-loaded ball-bearing ways.

MECHANICAL COMPARATOR—*Cosa Corp, 405 Lexington Ave, New York City 17, NY.* Manufactured by Sigma Instrument of England. Used for checking dimensions of parts at production line, in tool room, or inspection department. Magnifications range from 500 to 3000X with capacities of 6 in. and 12 in. in each magnification.

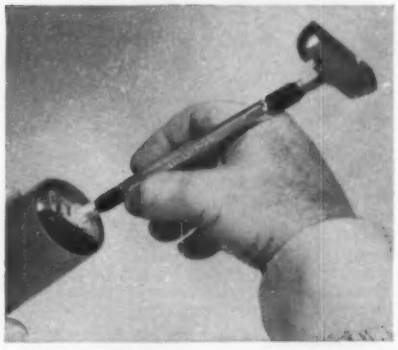
SPACING COMPARATOR—*Jerpbak-Bayless Co, Solon Road, Solon Ohio.* Checks flat and circular thread-rolling dies, form tools, within 0.0001 in. Range is 1/16 to 5½ in.

GAGE BLOCKS—*George Scherr Co, New York, NY.* 9-pc set claimed accurate to 0.000005 in. runs in 1/64 and 1/100-in. increments; builds 331 combinations, and will check micrometers up to 4 in.

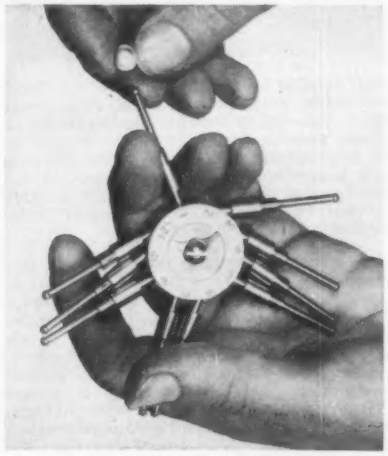


DIAL SNAP GAGE—*Boice Manufacturing Co, Staatsburg, NY.* Flat parallel anvils permit measurements close to shoulders. A 5:1 ratio of anvil travel is read on the indicator. Adjustable set master can be preset with gage blocks, locked in position, and sealed.

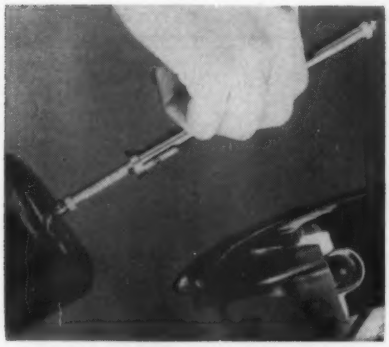
INDICATING THREAD GAGES — *George Scherr Co, Inc, 200 Lafayette St, New York 12, NY.* Line includes roller-thread pitch-diameter comparator gage and dial-thread plug gage for checking internal threads. The pitch-diameter gage has an indicator reading to 0.001 in. and is set by means of a master thread gage.



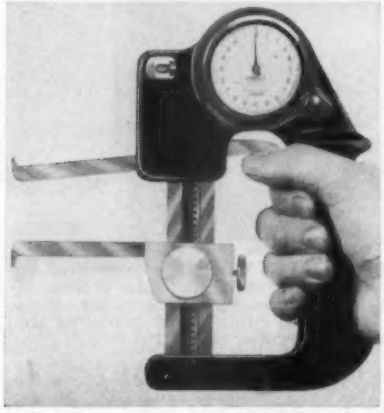
BORE GAGES—*M C Hutto Co, 6516 Detroit Ave, Cleveland 2.* 15 sizes of adjustable gages measure holes from 0.995 to 6.005 in. Feels variations within .00001 in.



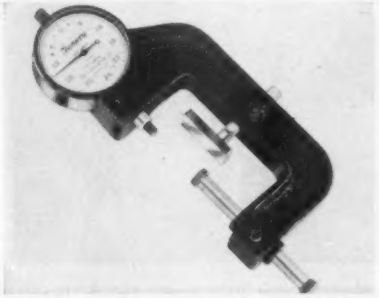
MULTIPLE GAGE — *Merz Co, Box 24605, Village Sta, Los Angeles 24.* Microsphere has ten measuring spheres in any desired increments, starting at 0.0001 in. Accuracy is +0 −0.000025 in. Available in tool steel and hard chrome.



THICKNESS GAGE — *Platers Research Corp 59 East Fourth St, New York 3.* Magnetic tester gages thickness of plating over steel, iron, from 0.0001 to 0.015 in. Pencil-size.

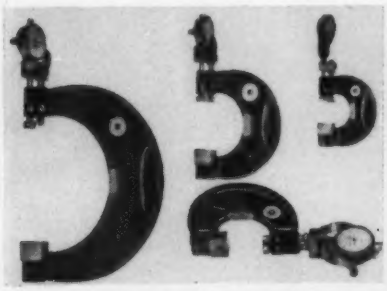


ID GAGE—*Mutual Engineering Service, 402 Court St, Saginaw, Mich.* Dial indicator measuring instrument was designed for the improved checking of 0-ring and snap ring grooves, but is also applicable to other inside diameters. Embodying some features of a height gage, the standard model will check holes from 1.375 to 3.625 in. in diameter and will expand to measure grooves as deep as ¼ in. Other sizes are available for smaller and larger bores. The price is $295.

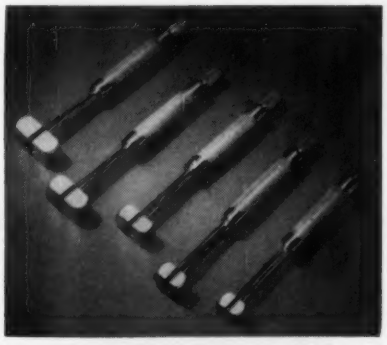


DIAL SNAP GAGE—*Chicago Dial Indicator Co, Dept D 180 N Wacker Drive, Chicago, Ill.* Large flat surface backstop permits instant positioning of work. Standard threading in indicator and lower anvil permits replacement.

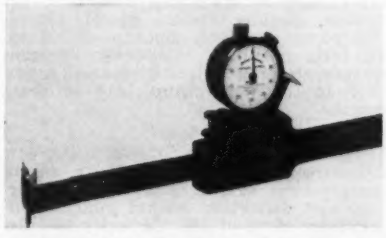
INTERNAL GROOVE GAGE—*Rimat Tool Co, 21 West Dayton St, Pasadena 2, Calif.* Y series checks dia of 0-ring grooves snap-ring grooves, and short counterbores. Interchanges with gage heads on standard gage bodies. Groove dia from ¼ to 5 in. may be checked.



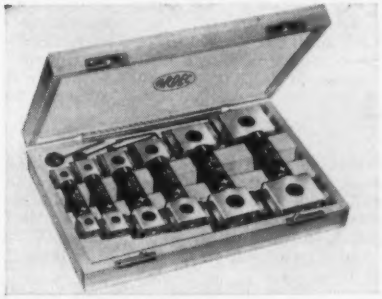
DIAL SNAP GAGES—*Standard Gage Co, Poughkeepsie, NY.* Dializers convert standard AGD snap gage frames to dial snaps. Indicator graduations of 0.001, 0.00025, 0.0005, and 0.0001 in. are available.



INSIDE ADJUSTABLE GAGES — *Barnaby Mfg Co, 74 Knowlton St, Bridgeport, Conn.* Sizes from ⅜ to 2 in. Sizes under 1 in. differentiated by increments of 0.100 in.; from 1 to 2 in. by increments of 0.250 in.

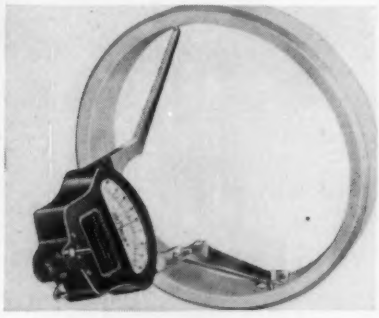


GROOVE GAGE—*Reliant Industries, 4947 Firestone Blvd, South Gate, Calif.* Inspects internal snap-ring grooves from 0.240 to 5.270-in. dia by dial indicator set to master ring gage. Also usable for checking out-of-round, ID, deep holes, recesses, taper, and inside spherical radii.

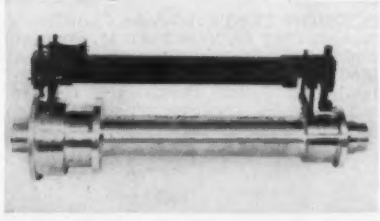


GO, NO-GO GAGES — *Ardec, Inc, Media, Pa.* Total range from 0.708 to 2.835 in. with six adjustable go, no-go gages. Each gage has long jaws similar to solid plug gages.

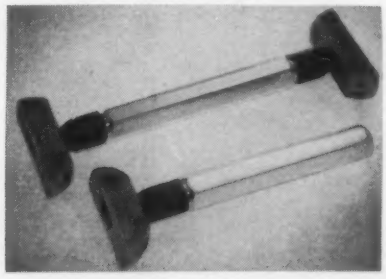
JO-BLOCK FRAME—*L E Ottney & Co Box 469, Clawson Mich.* Obtains accurate sizes for setting dial bore gages, can be used to hold rolls or balls when checking tapered depth gages. Available in 1, 1½, 2, 2¼, and 3-in. dimensions.



INTERNAL GAGE — *The Portage Double Quick Tool Co, 1026 Sweitzer Ave, Akron, Ohio.* For gaging diameters from ⅜ to 6 in. Adjustment is made by turning knob in center of gage; initial setting is made with gage blocks, master gage rings, or micrometers. Scale is graduated in 0.0005 in.

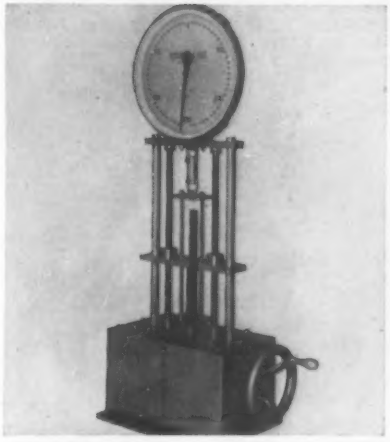


LENGTH GAGE — *Boice Mfg Co, Staatsburg, NY.* Lightweight comparator gage is equipped with a dial indicator for checking length dimensions on shafts and other assemblies.



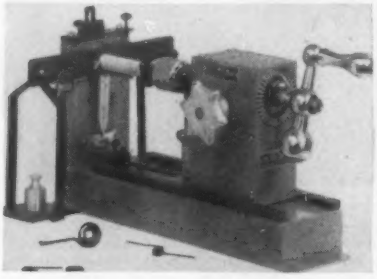
LIGHT BORE GAGES—*Madison Mfg Co, Muskegon, Mich.* Claimed to weigh a fraction of ordinary plug gages, yet withstand heavy punishment. Seven sizes cover from 1.432 in. up to 3.192 in.

TESTING MACHINE—*W C Dillon & Co, Inc, 14620 Keswick St, Van Nuys, Calif.* Model L has daylight opening of 75 in. Will test in tensile, compression, transverse, and shear. Seven capacities are offered.



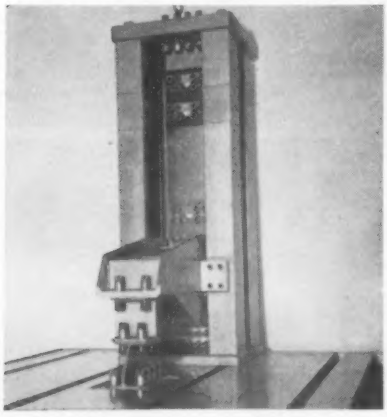
SPRING TESTER—*John Chatillon & Sons, 85-93 Cliff St, New York 38.* No. 965 tests up to 4½-in.-dia, 10-in. extension and 12-in. compression springs; loads 10-600 lb in steps; minimum graduations of 0.005 to 1 lb.

TENSION TESTER—*John Chatillon & Sons, 85 Cliff St, New York 38.* Portable Model 948 measures variable load at fixed distance, or variable distance of fixed load. Lineal range is ¼ to 6 in. in 1/32-in. increments; tension is from ¼ to 1¼ lb in ½ oz.



TORSION SPRING TESTER — *The Carlson Co, 277 Broadway, New York 7, NY.* Checks loads and deflections of torsion, double torsion, spiral, clock, and power springs. Speeds of 300 to 600 tests per hour. Capacity: torsion springs having wire diameter from 0.005 to 0.125 in., from 1/16 to 6-in. lengths.

SPRING TESTER — *Carlson Co, 277 Broadway, New York 7.* Tests small compression and tension springs for load and deflection within guaranteed accuracy of ¼ of 1%. Capacity is 1/64 oz to 12½ lb in lengths from ⅛ to 12 in.



FATIGUE TESTER — *Baldwin-Lima-Hamilton Corp, Philadelphia 42, Pa.* Loads to 50,000 lb on 10,000-lb machine provided by Sonntag 5:1 multiplying fixture.

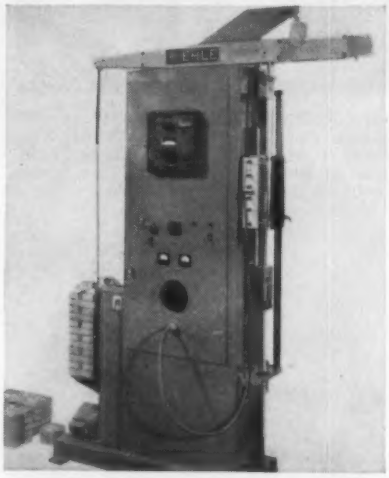
TESTING MACHINE—*Baldwin-Lima-Hamilton Corp, Philadelphia 42.* Automatic high-temp unit; 10,000-lb capacity. Accuracy within 1% of reading or ¼% of full scale. Standard recorder has 10-in.-wide strip chart with 100 divisions for full-scale readings of 10,000, 5000 and 2500 lb.

AMPLIFIER — *Baldwin-Lima-Hamilton Corp, Philadelphia 42.* PTL amplifies strain-gage or pressure-cell output to operate 5-v voltmeters; accurate to 1-2%.

COMPARATOR—*Baldwin-Lima-Hamilton Corp, Philadelphia 42.* Portable unit weighs only 44 lb and calibrates extensometers, compressometers, dial gages, and similar instruments. Will handle extensometers with gage length to 10 in.

FILAMENT GRIPS—*W C Dillon & Co, 14620 Keswick St, Van Nuys, Calif.* Gripping fixtures for securing fine filaments for tensile tests, designed for use on Dillon Multi-Low-Range Tester.

GEAR FATIGUE TESTER—*Sonntag Scientific Corp, Div Baldwin-Lima-Hamilton Corp, Philadelphia 42, Pa.* Test gears up to 10-in. PD can be subjected to torques up to 30,000 in-lb with max tooth load of 14,400 lb. Pinion-speed can be varied between 750 and 2500 rpm to transmit max of 1200 hp. Loading-gear face width of 4⅛-in. max governs face width of test units.



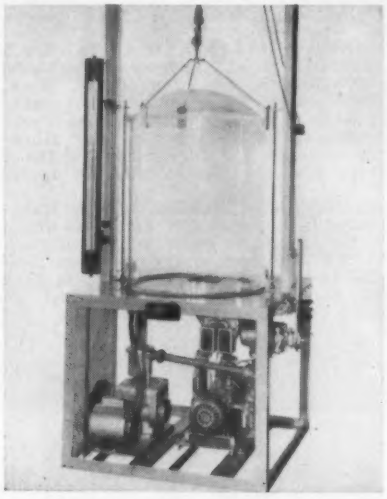
TESTING MACHINE—*American Machine and Metals, Inc, East Moline, Ill.* 12,000-lb capacity; determines stress required to rupture specimens as well as creep properties to rupture.

FORMING TESTER — *American Machine and Metals, Inc, East Moline, Ill.* Determines how metal alloys will react during forming operations and in use at high temperatures. Can utilize electric furnaces producing temperatures to 1750 F.

STIFFNESS TESTER—*Taber Instrument Co, Section 30, 111 Goundry St, N Tonawanda, NY.* Model 150 is more sensitive than previous model, having eight test ranges instead of six. Flexural rigidity of extremely thin materials can be determined with SR150-14 attachment which magnifies dial readings 100 times.

TESTING MACHINE—*Nutmeg Screw Machine Products Co, Wolcott, Conn.* Impact and wear of power screwdriver bits. Driven by gears and gear boxes, simulating production-line conditions at 5 rpm.

TEST CHAMBER—*Conrad, Inc, Holland, Mich.* Drops temperature from +600 F to —100 F in 2 hr, permitting continuous test under controlled conditions. Holds within 2°, or is variable at desired rate. Power devices can be operated in the chest.



VACUUM CHAMBER—*American Research Corp, Bristol, Conn.* 24x24-in. jar can simulate vacuum at altitude of 100,000 ft; power hoist to raise glass jar.

ENVIRONMENT CHAMBER—*American Research Corp, Bristol, Conn.* To 7½ psi in addition to automatically controlled temperature-altitude humidity. Temperatures from – to +185 F can be maintained at altitudes to 60,000 ft.

ALTITUDE CHAMBER — *American Research Corp, Bristol, Conn.* Delivers simulated altitudes up to 85,000 ft and temperatures as low as –85 F. In addition, dewpoints can be controlled down to –112 F, from 24,000 ft at +50 F to 85,000 ft at –85 F.

ATMOSPHERE TESTER—*The Electric Furnace Co, Salem, Ohio.* Portable visual unit determines quality of gas being produced by special-atmosphere generator, also quality of atmosphere in special-atmosphere heat-processing furnaces.

SELF-CLEANING SWITCH — *Industrial Instruments, Inc, 89 Commerce Road, Cedar Grove, NJ.* For test equipment; 12-position, continuous-rotation, detent-action type.

HEARING TESTS—*Industrial Acoustics Co, 341 Jackson Ave, New York 54.* Prefabricated portable audiometric soundproof room for testing employees' hearing measures 56 in. wide by 48 in. deep by 106 in. high.

TEST CHAMBER — *Webber Mfg Co, Inc, Dept 287, 2840 Madison Ave, Indianapolis 3, Ind.* For large capacity testing at high and low temperatures. Unit has 30-cu-ft capacity. Temperature range is from –40 F to +200 F. Other units have ranges to –200 F.

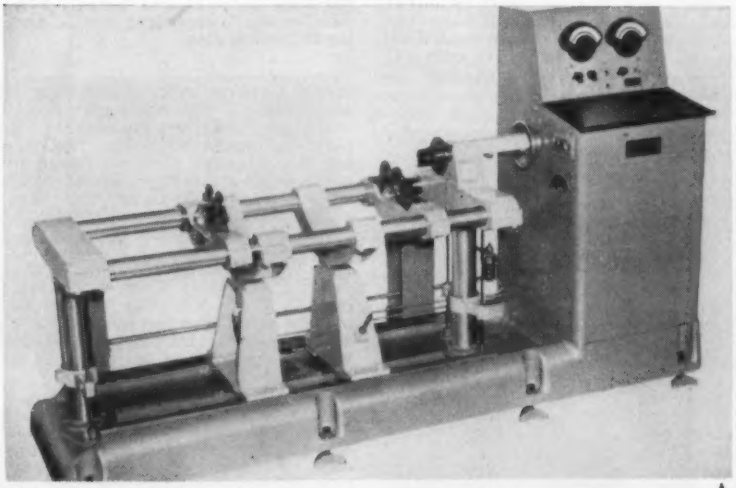
BALANCING MACHINE—*Balance Engineering Co, MacDell Sales Div, 850 W Lake St, Chicago 7.* 9 heavy-duty static and dynamic balancing machines for small and medium-sized rotors. Readings show unbalance-correction needed. Floor- and bench-mounted units.

HEAT TEST CHAMBER—*Cincinnati Sub-Zero Products Co, Cincinnati 29,* 3-cu-ft chamber alternates from –120F to +200F with half-cycle time adjustable from 0 to 120 min. Refrigeration and strip heaters included.

TUBE SOCKET TESTER—*Size Control Co, 2500 W Washington Blvd, Chicago 12, Ill.* Rapid readings for insertion and extraction pressures of male and female tube sockets over a range of 0-100 lb. Machine uses special interchangeable gages simulating vacuum-tube bases and/or vacuum-tube sockets.

DYNAMOMETERS — *Mission-Western Engineers, Inc, 132 West Colorado, Pasadena 1, Calif.* Model DM-3 measures hp output of electric motors of 2 hp and less and Model MDM tests motors of less than 1/10 hp.

BLOWER BALANCER—*R B Annis Co, 1101 N Delaware St, Indianapolis, Ind.* Model M2-S-44/U Annis underdrive balancer makes final balance checks on blowers with wheels from 2 to 8 in. in dia at rate of 180 assemblies an hour.



ELECTRONIC BALANCER — *Merrill Engineering Laboratories, 1240 Lincoln, Denver, Colo.* Will balance high-speed milling heads, cutters, and grinding wheels. Precision sensitivity is possible from ½ to 1000 lb. Length range is 4½ to 55 in. between bearing surfaces; diametral capacity is ½ to 44 in. Five sensitivities to max of 0.04 oz-in.

ELECTRONIC BALANCING—*Tinius Olsen Testing Machine Co, Easton Road, Willow Grove, Pa.* Electodyne electronic system automatically indicates amount and angular location of unbalance being measured. A horizontal static-dynamic model and a special automatic vertical static balancing machine are available.

LAYOUT and INSPECTION—testing machines

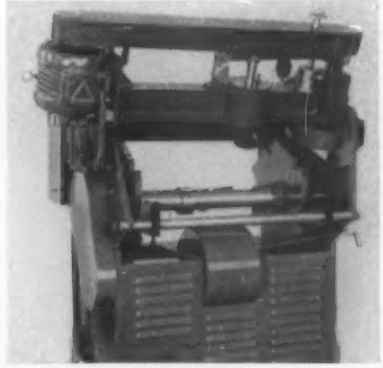
IMPACT TESTER—*Tinius Olsen Testing Machine Co, 1006 Easton Rd, Willow Grove, Pa.* Automatic progressive and repeat machine determines breaking point of gear teeth, and studies dynamic properties of parts subject to shock. Specimen holder can be adjusted to accommodate test materials up to 24 in. in height.

HARDNESS TESTER—*Tinius Olsen Testing Machine Co, 1006 Eastern Rd, Willow Grove, Pa.* Automatic Brinell unit handles 10 specimens per min, has built-in roller conveyor; air-operated lift. Those within tolerance are returned to conveyor.

HARDNESS TESTER—*Gries Industries Inc, Testing Machines Div, New Rochelle, NY.* Reflex machines for Vickers, Knoop, Grodzinski, Brinell, and Rockwell tests, feature load capacities from 1 to 250 kg, pushbutton load selection, and automatic projection.

LEAK DETECTION—*American Gas & Chemicals, 45 Rockfeller Plaza, New York 20.* Leak-Tec liquid detects minute leaks of gases, oils, air. Applied to surface to be tested by squeezing plastic container equipped with dispenser.

HARDNESS TESTER—*The Torsion Balance Co, Clifton, NJ.* Kentrall makes all regular Rockwell tests (60, 10, and 150-kg loads) and superficial tests (15, 30, and 45 kg loads) with any suitable standard C, N, or ball indenter.



SEMI-AUTOMATIC TESTING MACHINE—*Detroit Testing Machine Co, 9390 Grinnell Ave, Detroit 13, Mich.* Indexes test pieces through both spot-grinding and Brinell-testing stations. At the rate of 400 parts per hour, crankshafts, gun barrels and other such parts are fed into the machine and slide out ready for inspection.

HARDNESS TESTER—*Gries Industries, Inc, Testing Machines Div, New Rochelle, NY.* Wolpert-Gries Model HT-1 performs 400 tests per hr with 10-kg minor load produced by gravity. After minor load is applied, no setting is required. Can be adjusted to 100 and 150 kg major loads for Rockwell B and C tests.

HARDNESS TESTER—*Pacific Transducer Corp, 11921 West Pico Blvd, Los Angeles 64, Calif.* Use of calibrated microscope and reticle allows readings to be obtained within two points on the Brinell scale. Sheet stock of from 0.010 to 0.250 in. may be measured; instrument operates by using ½-in. ball with 150-kg load. Price: $78.75.

HARDNESS KIT—*Peabody Industrial Co, 2832 E Grand Blvd, Detroit 11.* Includes two 7-oz instruments, one for testing steel in the hard range, incorporating both R and Brinell 3000 kg. Nonferrous instrument has R and 500 kg Brinell scales.

METAL HARDNESS UNIT—*C Tennant Sons & Co, 100 Park Ave, New York 17, NY.* Multiple-angle, semi-portable metal hardness tester does not use clamps. Consists of modified portable Penetrascope, movably mounted on a slotted stand, the base of which contains electromagnets.

PORTABLE MAGNAFLUX — *Magnaflux Corp, 7300 W Lawrence Ave, Chicago 31.* Type Y-6 yoke kit is handled by one man. Yoke is placed on work and energized, and powder dusted over work. Area covered is approx 24 sq in.

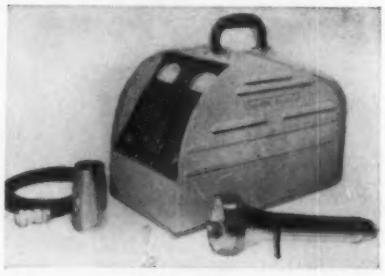
FLAW DETECTOR—*H E B Machine Tools, 475 Fifth Ave, New York 17, NY.* Self-magnetized system consists of central member which incorporates remagnetizing coil; two middle or side links; and two self-setting pole shoe brushes.

VIBRATION PLOTTER — *Franklin Electronics Inc, 415 West Pike St, Philadelphia 40, Pa.* Analysis of mechanical damping factors in rotating machinery; plots amplitude as function of frequency or speed.

HARDNESS TESTER—*George Scherr Co, 200 Lafayette St, New York 12.* Portable bench unit for small parts combines positive control, diamond penetrating action with high power microscope of 400X. Microscope is swung directly over impression to read hardness by measuring with reticle scale and vernier in 0.0005 mm, resulting in readings of unusual precision in half a micron.

CONVEYOR-LINE HARDNESS TESTER—*Steel City Testing Machines, 8817 Lyndon Ave, Detroit 38, Mich.* Roller conveyor section allows operator to roll part into position. As cycle begins, rollers drop out of way, allowing work to rest on anvil of hardened rails. Rollers automatically rise again.

HARDNESS TESTER—*Wilson Mechanical Instrument Div, American Chain & Cable Co, 230 Park Ave, New York 17, NY.* Fully automatic; between 1000-1200 tests per hour. Classifying is done by photo-electric units mounted on bezel rings of dial gage.

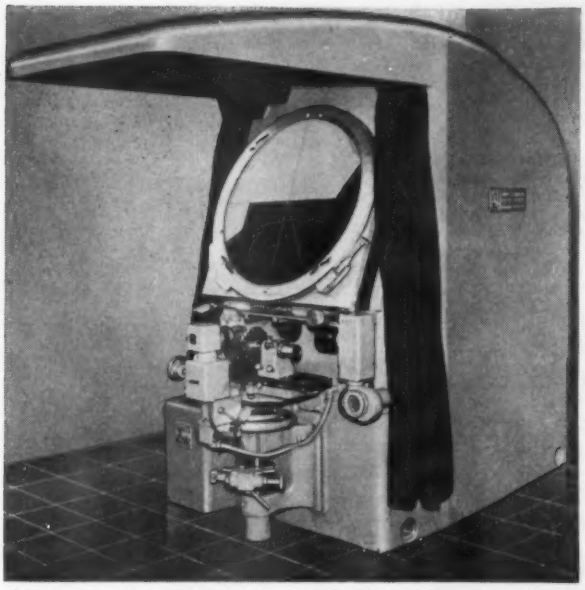


VIBRATION ANALYZER — *International Research and Development Corp, 168 E Hosack St, Columbus 7, Ohio.* Portable electronic Model 400, capable of balancing rotating parts at speeds to 5000 rpm and tracing any vibration to 20,000 cpm.

FLUORESCENT PENETRANT—*Magnaflux Corp, 7300 W Lawrence Ave, Chicago 31, Ill.* Zyglo-Pentrex picks up tight cracks and broad, shallow defects. Emulsifier is added in separate dip, so emulsifying and washing times can be controlled.

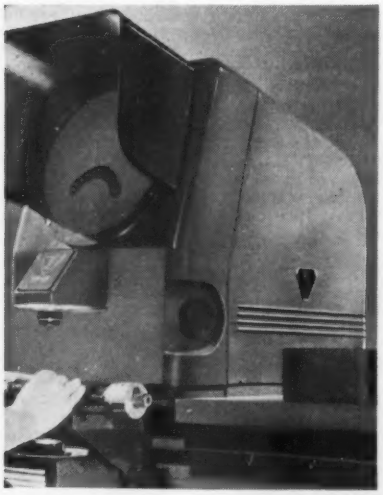
LEAK TESTING CASTINGS—*Moore Products Co, H and Lycoming Sts, Philadelphia 24, Pa.* Pneumatic system operates on plant air. Measurement is indicated on large gage and classified by signal light indication. The system pressurizes the cavity of the work, then measures and amplifies the difference between the original fill pressure and its lowered value if a leak is present.

MAGNETIC-PARTICLE TEST — *Research & Control Instruments Div, North American Phillips Co, 750 S Fulton Ave, Mount Vernon, NY.* Portaflux weighs 45 lb, locates surface defects. Objects are magnetized by passing current through metal or through surrounding cable in form of coil.



OPTICAL COMPARATOR—*Jones & Lamson, Springfield, Vt.* Model FC-30 allows operator to stage cumbersome parts on low-level worktable to work within inches of the eye-level viewing screen. Electronically controlled, variable-speed power elevation provides measurements to 0.0001 in.

OPTICAL COMPARATOR — *Jones & Lamson Machine Co, 160 Clinton St, Springfield, Vt.* Inspects slot contour, angular locations, and spacing on gas turbine disks from 12 to 36 in. in dia. Receiving screen is located at one side of workholding fixture and positioned vertically at eye level. Vertical travel of the worktable is hydraulically operated with a Servomechanism. The 30x 30-in. receiving screen permits use of projection lenses of suitable area to encompass most slots at magnifications of 31.25 or 50 times.

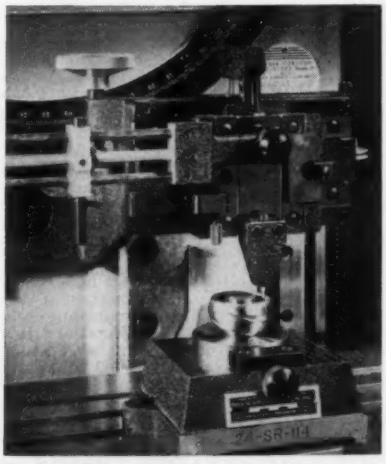


OPTICAL BENCH COMPARATOR — *The DoAll Co, DesPlaines, Ill.* Comparison of parts against master charts on quality control operation or short-run inspections. The 10-in.-dia, wide-angle screen permits multiple viewing. Five lenses provide magnifications of 10, 20, 25, 31¼, and 50X.

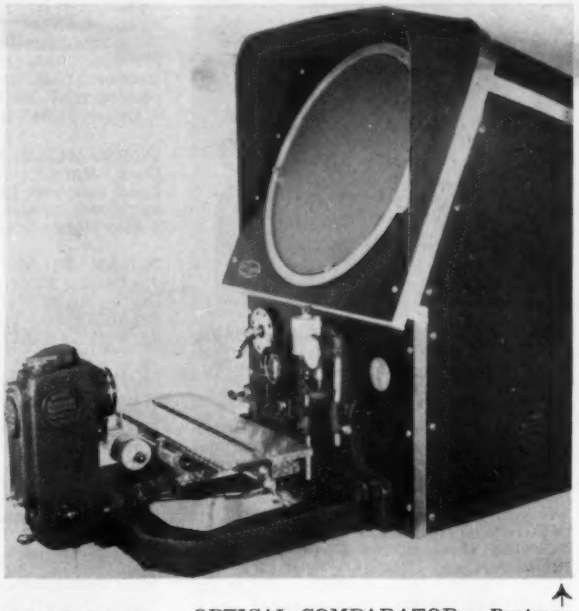
PORTABLE PROFILE PROJECTOR —*American SIP Corp, 100 E 42nd St, New York 17, NY.* For gaging silhouette in transmitted light and inspecting surface by incident light. Circular screen has a 7⅞-in. dia, is rotatable, and provided with graduations in degrees while vernier permits angular readings to 5 min. of arc. Three magnifications of 10, 20 and 50.

CONTOUR PROJECTOR — *Eastman Kodak Co, Rochester 4, NY.* Has 30-in. viewing screen; for use in precision micrometry and production lines. Staging area has 17-in. throat; table travel of 8 in., horizontally or vertically. Helix table has rotation of 15° in either direction. Six lenses with from 10 to 100x magnification.

OPTICAL COMPARATOR — *George Scherr Optical Tools Inc, 200 Lafayette St, New York 12, NY.* Model C small-parts comparator; horizontal work stage and vertical beam of light; screen and stage in line with vision.



COORDINATE TRACER — *Optical Gaging Products, Inc, 26 Forbes St, Rochester 11, NY.* Model 24 tracer increases versatility of optical projection gaging. It traces contours and transmits tracing motion to target in light beam of projector.



OPTICAL COMPARATOR — *Portman Instrument Co, Town Dock Road, New Rochelle, NY.* Horizontal Model L-400 has plain work stage furnished on standard model of 18-in. length. 6-in. work space from lens system centerline to plain-stage top working surface.

OPTICAL COMPARATOR—*Portman Instrument Co, Inc, Town Dock Road, New Rochelle, NY.* "Multi-Phase" system of the Model R-300 projects an upright, properly oriented image. Uses long focal lengths. Either plain platform-type stage, or a completely universal coordinate measuring stage may be used. Light source has variable volume control.

PROJECTOR-COMPARATOR — *The Portman Instrument Co, Inc, Town Dock Road, New Rochelle, NY.* Model OFG-200 optical form grinder projector-comparator may be used on standard precision surface grinders of 6x18 or 8x24-in. size. Conventional grinder controls are used to develop most shapes and forms by following enlarged drawing on the projection screen. Equipment may also be placed on a bench and used as standard optical comparator.

OPTICAL PROJECTOR — *Stocker & Yale, Inc, Marblehead, Mass.* Model 67 embodies vertical or horizontal lens systems, or both, in combination with contour or front surface projection.

OPTICAL COMPARATOR — *Nikon Inc, New York.* Shadowgraph, rests on edge of table and permits number of viewers to observe image thrown on 330-mm screen. Magnification is up to 230 times.

BENCH COMPARATOR — *Bausch & Lomb Optical Co, Rochester 2, NY.* With 10-in. screen; can be equipped with optional measuring attachment graduated to 0.0001 in. Instrument has below-stage illumination.

ANGULAR CHART — *George Scherr Inc, 200 Lafayette St, New York 12, NY.* For optical comparators; vernier reading to 5 min. Unbreakable plastic.

LAYOUT and INSPECTION—optical equipment

FLUOROSCOPE—*J W Dice Co, Englewood, NJ.* Loads from front. Screen size of standard model is 16x23 in.; inspection area, 18-½x26 in.

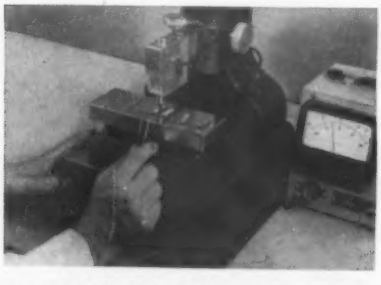
X-RAY FILM—*DuPont Photo Products Dept, E I du Pont de Nemours & Co, Wilmington, Del.* Type 510 for use at low voltages to examine low opacity materials, such as aluminum and magnesium. With million-volt X-ray, or betatron equipment, it may be used to examine steel up to three inches in thickness.

FLUOROSCOPE — *Radioactive Products, Inc, 443 W Congress, Detroit 26, Mich.* Fluoroscope uses gamma rays from radioactive isotopes rather than X-rays and only 25% of radiations will be absorbed in penetrating ¾-in. steel.

ULTRASONIC GAGE—*Branson Instruments, Inc, Stamford, Conn.* Vidigage measures thickness and detects laminar flaws from one side of the work. Sweep-width adjustment permits infinite choice of thickness scales, to read directly thicknesses from 0.012 to 2.5 in.

NON-DESTRUCTIVE TESTING — *Reed Research Inc, 1048 Potomac St, N W Washington, DC.* Ultrasonic technique for non-destructive testing of certain non-metallic solids. Prototype equipment, incorporating ultrasonic absorption techniques and automatic scanning, produces records of flaws or mechanical defects which were imperceptible in X-ray photographs of the same sample.

CONTINUOUS THICKNESS GAGE—*Pratt & Whitney, Div Niles-Bement-Pond Co, West Hartford 1, Conn.* X-ray gage for aluminum foil down to 0.0003 in. and steel as thick as 0.075 in. Can be furnished with dual range or three ranges.



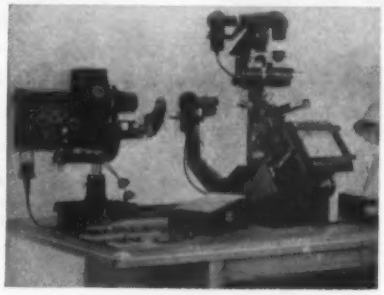
MICROCOMPARATOR—*Cleveland Instrument Co, 735 Carnegie Ave, Cleveland 15, Ohio.* Dimensional gaging in increments of one-half millionth of an inch is provided by the Micro-Ac electronic microcomparator. Induction gage head is mounted on rigid stand; drift-free amplifier with meter. The meter has two continuous linear scales which read 0.0000005 and 0.000001 per division.

STEREOMICROSCOPE — *Bausch & Lomb Optical Co, Rochester 2, NY.* Safe examination of dangerous subjects or watching machines work in danger areas with stereo view. Stereo photos may be taken through mechanism with 5x7-in. camera.

PORTABLE X-RAY—*Balteau Electric Corp, Stamford, Conn.* Self-contained head rated at 195 kv, 5 ma, weighs 153 lb. Head houses both X-ray tube and high-voltage transformers.

X-RAY FILM VIEWER — *Mitchell Radiation Products Corp, 128 E Washington St, Norristown, Pa.* Permits spot scanning and full study of any part—as well as 14x17-ft illumination.

NORELCO HELIUM ATTACHMENT —*Research & Control Instrument Div, North American Philips Co, Inc, 750 S Fulton Ave, Mt. Vernon, NY.* For Norelco X-ray spectograph units; permits use of helium instead of air in path of X-ray beam. Helium atmosphere extends useful spectrum range of the analysis equipment.



METALLOGRAPH—*William J Hacker & Co, Inc, 82 Beaver St, New York 5, NY.* MeF has integral 4 x 5 in. camera. Micro-hardness tester permits indentation by Vickers diamond in spot previously selected.

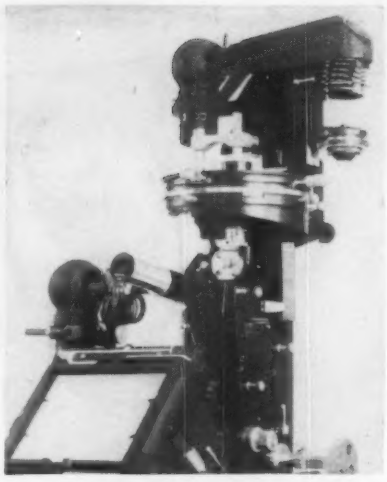
INTERFERENCE MICROSCOPE — *Farrand Optical Co, Bronx Blvd & E 238th St, New York 70.* Model B measures surface roughness of any material. Adaptable for visual or photographic use. Measures irregulatiries of 1 mu-in.

SURFACE-FINISH TESTER—*William J Hacker & Co, Inc, 82 Beaver St, New York 5, NY.* Reichert interference tester can be used with almost any inverted microscope. The range covers depth of roughness from 1 to 0.015 microns.

POCKET COMPARATOR — *National Tool Co, 11200 Madison Ave, Cleveland 2, Ohio.* Uses 6-power lens and transparent reticles with various master layouts. Seven reticles are available. Comparator cost is $9.75.

SPINDLE - TRUING SCOPE — *F T Griswold Mfg Co, Lancaster Pike, Devon, Pa.* Centering microscope has reticule with two sets of parallel lines at right angles intersecting at optical axis of microscope with 0.002-in. space between them. Also segments of concentric circles with diameters from 0.040 to 0.280 in.

GLASS COMPARATOR CHARTS — *Template Reproduction & Engineering Co, 401 N Broad St, Philadelphia 8.* Treco process, utilizing direct contact reflex photographic system, can be applied for high-precision, rapid production of charts for optical comparators.



METALLOGRAPH—*Wm J Hacker & Co, New York, NY.* Tester will do phase contact, interference test, micro-hardness test; has zirconium-arc illumination.

GAGE RECORDING UNIT—*Merz Engineering, Inc, 200 South Harding St, Indianapolis 7, Ind.* Works with standard pickup heads used on Merz electronic comparators, height gages, or special electronic checking fixtures. It will record individual readings on production parts and automatically advance ⅛ in. between inspection cycles.

METAL SORTER—*J W Dice Co, Englewood, NJ.* Non-destructive testing and sorting of accidentally mixed or incorrectly processed metal parts can be done with the Model C-1 Syclograph. It can be used on either ferrous or non-ferrous metals.

MONOCHROMATIC LAMP — *Acme Scientific Co, 1450 West Randolph St, Chicago 7, Ill.* Model 700-L for use where absolute interpretations of interference fringes are required. Covers optical flats with diameters of 10, 12, 14, 16, and 20 in.

FIXER NEUTRALIZER — *General Electric X-Ray Department, 4855 Electric Ave, Milwaukee 1, Wis.* X-ray films are removed from fixer, placed in the fixer neutralizer for 5 min, and solution decreases the necessary washing time to 5 min.

MAGNIFIER—*Edroy Products Co, 480 Lexington Ave, New York 17.* Magni-Focuser, a 3-D binocular unit, reads fine calibrations. Magnified vision in third dimension.

VIEWER—*International Development Co, 1 South Reed St, East Riverton, NJ.* 1½-in. dia six-power lens; measures angles, small diameters and radii, and microscopic lengths, through glass-inscribed reticle.

BENCH TELESCOPE—*F T Griswold Mfg Co, Lancaster Pike, Devon, Penna.* Teleloupe is a machine-aligning telescope,, but converts to short-range loupe. Magnification at from 15 ft to infinity is 8X.

EYEGLASS LOUPE—*Bausch & Lomb Optical Co, Rochester, NY.* Five powers in single-lens model: 3X, 3.3X, 4X, 5X, and 7X; double-lens model provides alternative powers of 4X or 7X, depending on whether one or both lenses are used.

controllers and indicators—LAYOUT and INSPECTION

TEMPERATURE CONTROL—*Blue M Electric Co, 306 W 69th St, Chicago 21, Ill.* Automatic temperature controller or excess temperature cut-off, or verifies temperature of controllers in use.

TEMPERATURE CONTROLLER — *Fieldon Instrument Div, Robertshaw-Fulton Controls Co, 2920 N 4th St, Philadelphia, Pa.* Two-zone electronic controller uses a resistance temperature-detector element in bridge circuit with high-gain phase-sensitive amplifier.

TEMP CONTROL—*The Bristol Co, Waterbury 20, Conn.* Ten complete control packages for furnace, oven, kiln, or dryer applications for automatic control of any heating application.

ROTARY SPEED CONTROL—*Kahn & Co, Inc, 541 Windsor St, Hartford 1, Conn.* Mechanical-electrical translater is available in two models: first will open or close electric circuit at predetermined rpm; other is a multispeed instrument for automatic control of a sequence. Operational range is 1200 to 5000 rpm.

GAGE CONTROL—*Pratt & Whitney, Div Niles-Bement-Pond Co, W Hartford 1, Conn.* Model E provides automatic thickness correction on rolling mills equipped with electrically operated screw-down motors.

OVEN CONTROLLER — *Bristol Co, Waterbury 20, Conn.* Electronic dynamaster time-temperature program controller uses clear-plastic cam, cut for each operation.

LIQUID LEVEL CONTROL—*Viking Instruments, Inc, East Hadam, Conn.* For liquid temp to 600 F, pressures to 500 psi, and ambient range of 0 to 150 F.

DOWNTIME RECORDER—*The Service Recorder Co, 1375 Euclid Ave, Cleveland 15, Ohio.* Recorder can be located anywhere; requires only a wire connection to machine's motor. Standard 6-in.-dia, 24-hr chart will revolve three times. If desired, elapsed timer or counter is included.

TOOL CONTROL METHOD—*Scully-Jones & Co, 1901 S Rockwell St, Chicago 8.* Special panels (Toolitrols) with automatic counting and signaling devices coordinate at-the-machine functions of presetting, storing, and changing cutting tools.

TOOL CONTROL UNIT—*The Cross Co, Dept 16P, Detroit 7, Mich.* Four sizes with one, two, four, or eight Toolometers which automatically shut down any metalworking machine when tools need changing.

PROCESS CONTROLLER — *Wheelco Instruments, Div Barber-Colman Co, Rockford, Ill.* 400 Series Capacitrol, available in many control forms, is a self-contained direct-deflection indicating controller. Two-compartment aluminum case houses components.

INPUT CONTROLLER—*The Winslow Co, 9 Liberty St, Newark 5, NJ.* Truetemp, added to an existing on-off temp control system, maintains heating temp as close as ± 0.2 F. Can be used with all heating systems, provided present control instrumentation is thermocouple-actuated. Model 1700-115 is available for 115 v, 50/60 cycle lines, and Model 1700-230 for 230 v, 50/60 cycle supplies.

INDICATING CONTROLLER—*Industrial Div, Minneapolis-Honeywell Regulator Co, Wayne & Windrim Aves, Philadelphia 44, Penna.* Measures and controls two temperatures. With wet and dry bulb system for humidity and vapor gas or mercury-filled thermal systems.

DUPLEX CONTROLLER — *Foxboro Co, Foxboro, Mass.* Regulates both temperature and concentration of blackening-bath solutions. Opens or closes water valve, raising or lowering to correct value of boiling point.

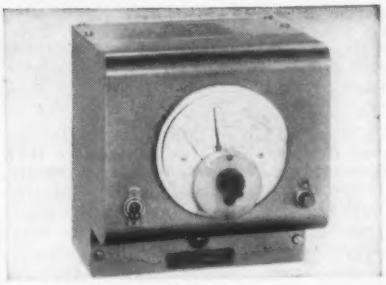
ELECTRONIC TIMERS—*G C Wilson & Co, 1950 Eighth Ave, Huntington, W Va.* Two repeat-cycle electronic timers provide on-cycles ranging from 0.01 to 150 seconds and off-cycles ranging from 0.01 to 900 seconds. They utilize one radio-type tube and a voltage regulator to charge the two resistance-capacitance networks.

SORTING GAGE—*Moore Products Co, H & Lycoming Sts, Philadelphia 24, Pa.* Gage measures both wall and base thickness of copper-clad bullet jacket cups at one time by means of jets of air. Pneumatic cylinder, operating at 2500 pieces per hr, brings cups into position.

PROPORTIONAL SYNCHRONIZER —*Pratt & Whitney, Div Niles-Bement-Pond Co, W Hartford 1, Conn.* Stores meter readings of various magnitudes, and reproduces information later in a process. Meter readings are applied to memory unit though self-balancing electronic control circuit.

ELECTRONIC GAGE HEAD—*Engis Equipment Co, 310 S Michigan Ave, Chicago, Ill.* Operates with Talysurf amplifier and recorder; features axial or side-action, precise rugged construction, light gaging pressure, and magnifications variable from 100 to 5000X.

ELECTRICAL RECORDER—*Illinois Tool Works Chicago, Ill.* Equips analytical measuring machines and hob and worm lead machines. Produces permanent record.



TEMPERATURE CONTROL—*Cybertronic Corp of America, Dept AM, Industrial Center, 3rd & Morton Aves, Chester, Pa.* Cyber-Tac Model No. 505 electronic instrument for high-temp furnaces and other heating applications.

COUNTER—*Haledy Electronics Co, 57 William St, New York 5.* Model RC-cold-cathode electronic unit operates at speeds to 10,000 counts per min, has total counting capacity of 9,999,999.

COUNTER, TIMER — *Berkeley Div, Beckman Instruments, 2200 Wright Ave, Richmond, Calif.* Model 5510 is capable of measuring time from 3 micro-seconds to 1,000,000 sec, frequencies from 0 to 1 mc; period of frequencies from 0 cps up.

PRODUCTION COUNTER—*American Hydromath Corp, 25-20 43rd Ave, Long Island City 1, NY.* Accepted and rejected pieces are each shown on two counters.

HIGH-SPEED COUNTING — *Atomic Instrument Co, 84 Mass Ave, Cambridge 39, Mass.* Processes may be monitored by preset counter at speeds to 5000 counts per second. The all-electronic unit, Model 164, is designed for industrial applications in controlling automatic machinery and processes.

TIMER—*Potter Instrument Co, Inc, 15 Cutter Mill Road, Great Neck, NY.* Model 432 measures short-time intervals. Three ranges: 0.01 to 9.99 msec, 0.1 to 99.9, and 1 to 999msec. Also serves as totalizing counter with count capacity of 999.

PREDETERMINED COUNTER — *Durant Mfg Co, 1945-B N Buffum St, Milwaukee 1, Wis.* Model 5-SP-1-MF Productimeter, electrically operated, controls production on any electric counting installation. Counts from 1 to 99999 at 600 counts per minute.

INSTRUMENTS — *The Bristol Co, Waterbury 20, Conn.* Three-part pneumatically operated metagraphic system measures, indicates, records, and controls pressure, vacuum, temperature, liquid level, differential pressure, or flow.

RECORDER-CONTROLLER—*Robertshaw-Fulton Controls Co, 2920 North 4th St, Philadelphia 33.* Unit-assembly instruments control temperature, strain, pressure, etc; 4 inputs; temperature detectors for -200 C to +500 C.

RECORDING SYSTEM — *Industrial Div, Minneapolis-Honeywell Regulator Co, Philadelphia 44, Penna.* Thermocouple conditions at multiples of 48 to 144 points are recorded at rate of 12-60/min, in reference to single set point.

LAYOUT and INSPECTION—controllers and indicators

HOUR LOG—*Engler Instrument Co, 250 Culver Ave, Jersey City, NJ.* Provides continuous record of running time for all industrial machines operating on ac current.

PEN LIFTER — *Minneapolis-Honeywell Regulator Co, Industrial Div, 4494 Wayne Ave, Philadelphia 44.* Automatic device for single-record strip chart recorders.

VISCOMETRAN — *Brookfield Engineering Labs, Inc, Technical Applications, 240 Cushing St, Stoughton, Mass.* Provides accurate and continuous viscosity measurement of materials in process. In use, a spindle is rotated by a synchronous motor at constant speed in liquid under test. The instrument may be used for applications involving base mount temperatures up to 200 F and in a vacuum from 8mm of mercury to pressures of 100 psi.

HAND TACHOMETER — *Jones Motrola Corp, 432 Fairfield Ave, Stamford, Conn.* Shows rpm in ranges of 50-500 and 500-5000; shifted to high or low ranges by quarter turn of control button. Indicates fpm by substituting disk for tips.

HAND TACHOMETER—*Metron Instrument Co, 432 Lincoln St, Denver 3, Colorado.* A thumb-operated range selector on the Metron hand tachometer automatically changes the scale numbers for each range. Available to measure speeds as low as 2 and as high as 100,000 rpm.

TACHOMETER GENERATOR—*General Electric Co, Schenectady 5, NY.* Provides voltage output of 50v/1000rpm for speeds to 500 rpm, and 100v/1000 rpm for speed to 25,000 rpm.

GAS METER—*J J Monaghan Co, 500 Alcott St, Denver 4, Colo.* Bennett meter has rotors; pocket size claimed accurate to 5% between 5-65 liters/min.

TIMER—*Benchmaster Mfg Co, 1835 W Rosecrans Ave, Gardena, Calif.* Tele-Trol varies from 0 to 10 sec; resets. Shutoff or start. Load; 30 a, 125 v.

FLOW METER — *Bowser Inc, Ft Wayne, Ind.* Xactronic electro-magnetic meter 950 is accurate to 1% of full-scale reading. Sizes run from ½ to 2 in. pipe.

THERMOSTAT—*Fenwal Inc, Ashland, Mass.* Enclosed in plastic sleeve for severe humidity, corrosion service; can be used for temperature control or overheat detection for such applications as plating baths, pickling baths, humidity and corrosion testing chambers.

DIFFERENTIAL CONVERTER — *Minneapolis-Honeywell Regulator Co, Industrial Div, Wayne & Windrim Aves, Philadelphia 44, Pa.* Measures level of liquids in a closed tank, either under pressure or vacuum. Range is readily adjustable in field applications from 0-14 to 0-200 in. of water. Withstands temp up to 350 F; rated for pressures of 750 or 1500 psi.

GEAR INSPECTION CALCULATOR —*Dexter Machine Products, 20451 US 12 West, Chelsea, Mich.* Determines relationship between tooth thickness and radial displacement, and total composite error.

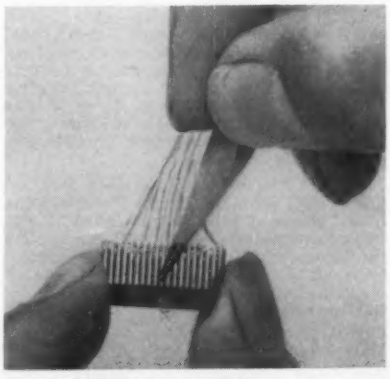
MICRO COUNTER—*John Chatillon & Sons, 85-93 Cliff St, New York 38.* Model MC-22 has a capacity of 4 lb and will count parts as light as 0.005 oz in ratios of 10:1 or 100:1. Replaces Model MC-2.

METAL IDENTIFICATION—*Westcott Laboratories, Elizabethtown, NY.* Chemi-Spot kit utilizes spot-testing techniques for testing over 80 commonly used metals and alloys.

PYROMETER — *Assembly Products, Inc, P O Box 191, Chagrin Falls, O.* Automatic Simplytrol rated at 5 amp, 125v, for turn on and shutoff. Ten ranges cover −400 to +300 F.

MARKING STICKS — *Tempil Corp, 132 W 22nd St, New York 10, NY.* For 282 F and 294 F, for particular use in the rubber industry, checking mold temperatures.

CRANE SCALE—*John Chatillon & Sons, 85 Cliff St, New York 38, NY.* Model No. 16-10000DH has 10,000-lb capacity, with four alloy steel springs to measure load. Readings are direct, in 25-lb increments.



HEAT-SENSING CELL — *Eastman Kodak Co, Rochester 4, NY.* Ektron Detectors are photoconductive cells with extreme infra-red sensitivity. Where mechanical switching is not satisfactory, detector permits light beam to replace moving part.

TEMP-INDICATING CRAYONS — *Tempil Corp, 132 West 22nd St, New York 11.* Tempilsticks for 413 and 438 F. make it possible to determine temp intervals intermediate to 400, 425, and 450 F, previously available.

MINIATURE THERMOSTAT — *Fenwal Inc, Ashland, Mass.* ¼-in. dia and 2¾ in. long. Used (with suitable relay circuit) as precision temperature controller in any heated device. Temperature range of −65 to +450 F.

DIAL INDICATOR — *Hairspring Vibrating Co, 406 32nd St, Union City, NJ.* No. 222 has spirals manufactured with special grinding process and plated and polished to insure fine action.

DIAL COMPARATOR—*Mercury Supply Co, 410 Fairview, Elmhurst, Ill.* JKA for reading of dimensions of small parts. Supplied in millimeters or inches; range: 0-10mm, graduation 0.01-mm; range: 7/16, graduation 0.0005 in.

DIAL INDICATOR—*Chicago Dial Indicator Co, Dept D, 180 N Wacker Drive, Chicago.* Threaded stem Geneva units fitted with special bases are used as depth gages. Graduations of 0.001, 0 0005, and 0.0001 in. and ranges of 0.200, 0.125, and 0.060 in.

DIAL INDICATOR—*Federal Products Corp, 1144 Eddy St, Providence 1, RI.* Measures 2 in. in increments of 0.001 in.; designated D8IT.

INDICATOR POINTS — *Tooling Associates, Box 945, Providence 1, RI.* Dial indicator points of boron carbide are made by Robt Marks Co to AGD specs. Spherical, conical, and flat types highly polished and lapped.

INDICATOR HOLDER — *Enco Mfg Co, 4520-26 West Fullerton Ave, Chicago 35, Ill.* Duplex magnetic base holder mounts indicators up to 3 in. in dia with a 125-lb pull. Swivel adapter allows 360° adjustment. Price $15.50.

INDICATORS—*L S Starrett Co, Athol, Mass.* Line of dial indicators features greater accuracy and sensitivity, faster readings because of easy-reading dials and low-friction, low-inertia movements, longer life because of fewer parts, and reduced maintenance.

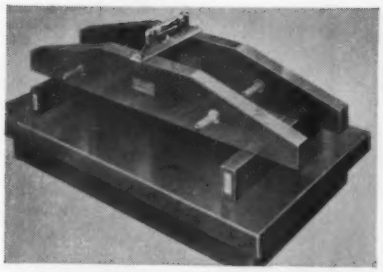
INDICATOR MECHANISM — *Nilsson Gage Co, Poughkeepsie, NY.* Nilcoid movement for dial indicators has 50% fewer parts, no gears, and is claimed to outlast ordinary indicators at least 20 times with no change in accuracy.

CRANE SCALES — *Hydroway Scales, Inc, 20624 W 8 Mile Rd, Detroit 19, Mich.* Kilogram scale at same cost as equivalent models in pound-scales.

SLIDING SWIVEL — *L A Rocheleau Tool & Die Co, 650 N Main Street, Leominster, Mass.* Positioning of dial gages graduated in ten-thousandths is done without tapping indicator rod. Separate clamp for each rod allows approximate setting. Final positioning by lever.

PROXIMITY GENERATOR—*Electro Products Laboratories, Inc, Chicago 40.* Model 4900 pickup produces dc voltage when metal object is brought close to pickup; used for counting, spacing, timing.

layout equipment—LAYOUT and INSPECTION



STRAIGHT EDGES—*Rahn Granite Surface Plate Co, 644 Northwestern Ave, Dayton 7, Ohio.* Parallel edges made of diabase (black granite) in matched pairs of same height within tolerance of 0.00005 in. Edges are straight within some tolerance.

SURFACE PLATE CALIBRATION—*Rahn Granite Surface Plate Co, 644 N Western Ave, Dayton 7, Ohio.* Equipment consists of a Rahn black granite straight edge 36 in. long, a pair of 2-in. black granite parallels, and a 0.00005-in. indicator mounted on a special base.

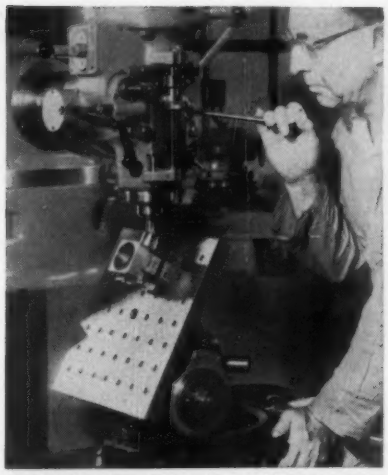
CUBE PARALLELS—*Rahn Granite Surface Plate Co, 644 N Western Ave, Dayton 7, Ohio.* Matched pairs made of diabase are finished top and bottom to tolerance of 0.00005 in.

GRANITE SURFACE PLATES—*Bryant Chucking Grinder Co, Springfield, Vt.* Standard sizes range from 12 x 18 in. up to 36 x 48 in. Over-all accuracy is guaranteed to 0.0001 in the smaller sizes, or 0.0002 in the larger sizes.

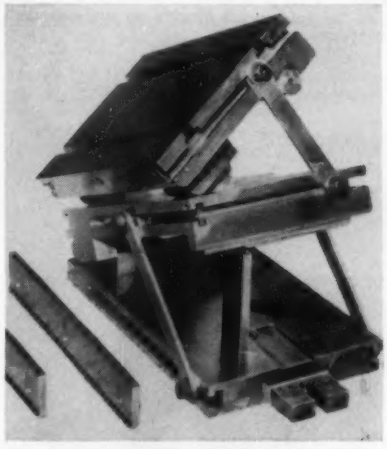
BLACK GRANITE STRAIGHT EDGES—*Collins Microflat Co, 2326 E 8th St, Los Angeles 21, Calif.* Surfaces are finished to an accuracy of 0.0002 in. per ft. Reduction in work involved in finishing to this accuracy results in a more economical straight edge. Nonwarping, non-deflecting, easily washable, smooth, temperature inert, rigid over-all, and moisture repellent.

BLACK GRANITE PLATE — *Collins Microflat Co, 2326 East 8th St, Los Angeles 21, Calif.* Small size for bench use. The 15-lb unit is 8x12x2 in.; finished to an accuracy of 0.0002 in. over-all. Price $22.95.

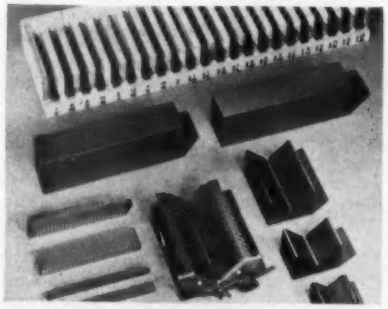
SETUP BLOCKS—*Jergens Tool Specialty Co, 712 E 163rd St, Cleveland 10, Ohio.* Aluminum alloy; hold work from zero to 3-in. and can be mounted on 3-in. high Jergens risers.



COMPOUND ANGLE COMPUTER—*Angle Computer Co, Inc, 1709 Standard Ave, Glendale 1, Calif.* Horizontal, vertical and radial rotation. Horizontal protractor has two verniers set at 90°. Vertical and radial verniers have one protractor each. All have 1′ graduations.



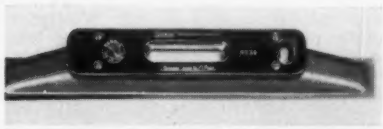
SINE PLATE — *Fleming Engineering Service Co, 7001 Glen Hills Rd, Fort Worth, Texas.* Compound-angle plate sizes from 5 x 10 in. to 10 x 20 in. Ground surfaces give over-all accuracy of ±0.0002 in.



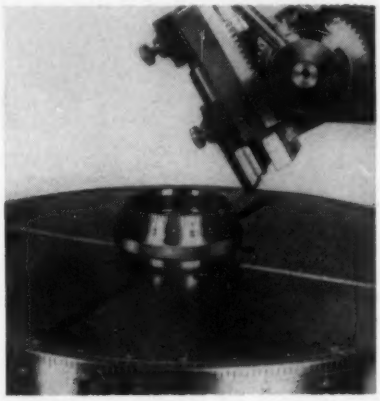
MAGNETIC V-BLOCK — *Anton Machine Wks, 1226 Flushing Ave, Brooklyn, NY.* Adjustments to within 5 min. of angle; unit has no pins—will not shift when setup is moved off grinder temporarily.

ANGLE PLATE — *Federal Machine Tool Co, Bristol, Conn.* Built-in recess for C-clamp. Working surfaces are within 0.0002-in. squareness.

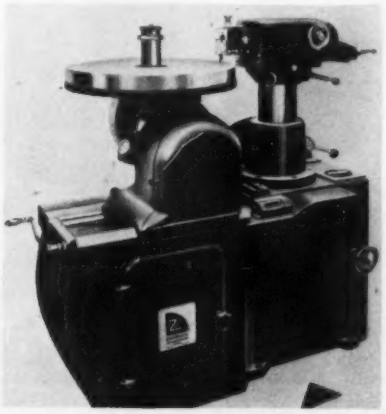
ALUMINUM LEVEL—*Columbian Vise & Mfg Co, 9021 Bessemer Ave, Cleveland 4, Ohio.* Has one plumb, one level, and one 45° vial. Unit is 9 in. long, 1⅛ in. high, and ⅝ in. wide.



LEVEL—*Lufkin Rule Co, Saginaw, Mich.* 10-sec accuracy, on division is 0.0005 in. per ft. Fine adjustment screws. Top plate insulates. 15 in. long.



CIRCULAR DIVIDING MACHINE—*Engis Equipment Co, 310 S Michigan Ave, Chicago, Ill.* For dividing flat, cylindrical, and tapered instrument, machine-tool, and fixture dials. Its precisely centered 20-in. table will support heavy work pieces, and accuracy is assured through master cams; gear trains are not used. Machine operates with automatic cycle.



DIVIDING MACHINE—*Wm J Hacker & Co, 82 Beaver St, New York 5.* Model Z-950 graduates circular, cylindrical, and linear surfaces up to diameters of 950, 1400, and 800 mm resp.

DIVIDING MACHINES — *William J. Hacker & Co, 82 Beaver St, New York 5, NY.* For circular, cylinder, and linear dividing of gages, scales, verniers, rules, measuring drums, dials, and similar instruments. Linear machines are available for operations requiring max lengths up to 50 in.

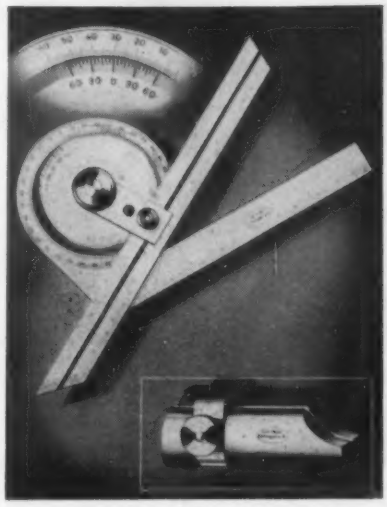
TEST-CENTER — *Inspection Devices Co, 5636 Lake Park Ave, Chicago 37.* Surf-center may be used on any surface plate in vertical, horizontal, or angular position. Swings a 5-in. dia. Max capacity between centers, 7 in.

PRECISION ANGLES — *Taft-Peirce Mfg Co, Woonsocket, RI.* Multiplex angle plates are 12x12x12. Base has recessed lips for clamping to table, vertical face has tapped holes and slots. Working surfaces are square within 0.0005 in. in 6 in., parallelism held to 0.0005 in.

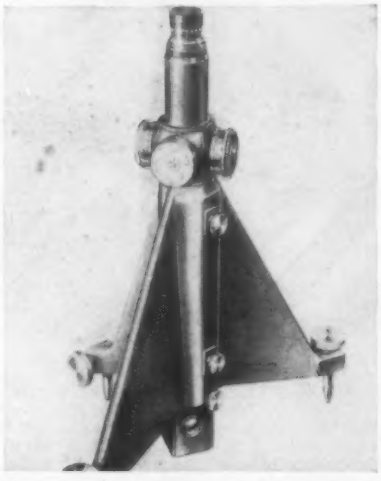
BRACH SQUARE—*US Bearing Corp, Los Angeles, Calif.* Checks out true 90° relation between one plane surface and another up to 100 times faster with no sacrifice of accuracy.

HEIGHT GAGE—*George Scherr Co, Inc, 200 Lafayette St, New York 12, NY.* Base slotted in front to allow short solid jaw with straight scribing point to reach down to surface plate used. Stock sizes are 10, 20, and 40-in. measuring capacity.

HEIGHT GAGE—*Cadillac Gage Co, Detroit, Mich.* Micrometer settings within 48 in. to 0.0001 in. in 24. in. Bar is deep-frozen, stain-free steel alloy.



VERNIER BEVEL PROTRACTOR—*George Scherr Co, 200 Lafayette St, New York 12.* Measures any angle to 5 minutes by means of vernier. Equipped with 6-in. blade, additional 12-in. blade can be furnished, also a stand with precision lapped base which can be set up on shafts as well as flat surfaces.

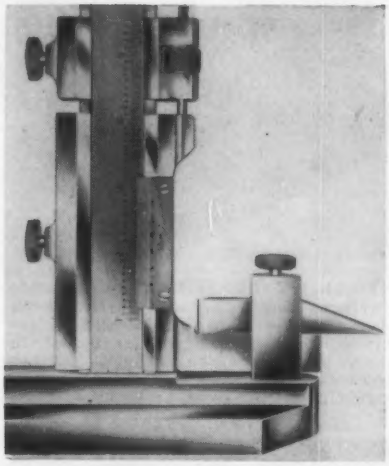


SWEEP OPTICAL SQUARE — *Engis Equipment Co, 313 S Michigan Ave, Chicago, Ill.* Incorporates micro-alignment telescope to determine lack of true flatness. Instrument is set up to sweep a plane defined by three points on the surface.

HEIGHT GAGE—*Allied-International Tool Co, 7070 Hollywood Blvd, Los Angeles 28, Calif.* 0.050-in. double vernier, adjustable vernier plates, and large vernier screws. Available in 6, 12, 24, 36, and 48-in. capacities.

HEIGHT GAGE — *Cleveland Instrument Co, 735 Carnegie Ave, Cleveland.* Improved Fairfield micro-height gage reads from 0 to 3 in. in thousandths; added riser takes it to 6 in. Reads like micrometer.

PORTABLE LAYOUT MACHINE—*C R Ott Instrument Corp, Route 10, Hanover, NJ.* Model 3A permits layout and centerdrilling of flat stock, sheet stock, die blanks, and plastic plates, square or circular.

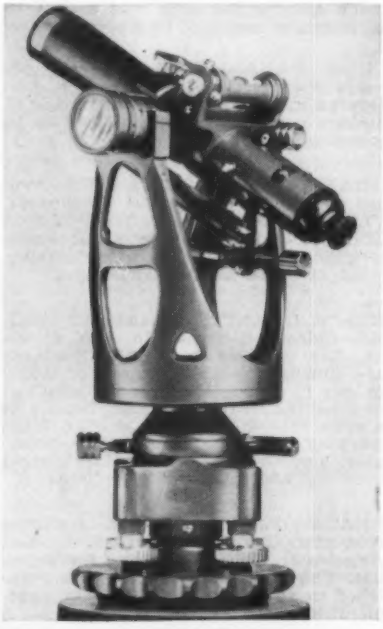


HEIGHT GAGES—*Foster Supplies Co, 6122 Milwaukee Ave, Chicago 30, Ill.* Hardened beam; 1.225-in. adjustable vernier also made of chrome-plated stainless steel. Sizes: 12, 14, 18, 24, 36, and 48 in.

VERNIER-CALIPER—*George Scherr Co, Inc, 200 Lafayette St, New York, NY.* Microlock caliper is said to be ideal for use as height gage by adding sturdy base and scribing attachment.

PROFILE TEMPLET—*Toolcraft Mfg Co, PO Box 507, East Chicago, Ind.* 12-in. Ajusto composed of brass strips 0.010 in. thick. Male and female profile of objects 12 in. long and 4-in. depth of contour.

DIAL SQUARE — *Morris Abrahams, Inc, New York 13.* Acru instrument reads in taper, in. per ft, to 0.030 in./ft. of angles between right-angle surfaces.



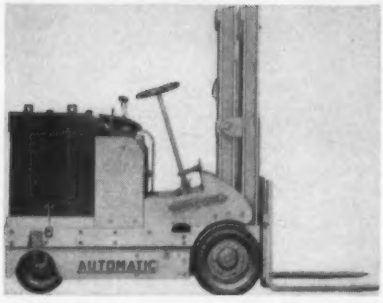
OPTICAL INSTRUMENTS — *Chas Bruning Co, Inc, 4700 Montrose Ave, Chicago 41.* Jig transit and optical transit square are designed to reduce errors in alignment to less than 0.001 in. Transit square has hollow axis.

American Machinist

1955 PLANT SERVICE EQUIPMENT

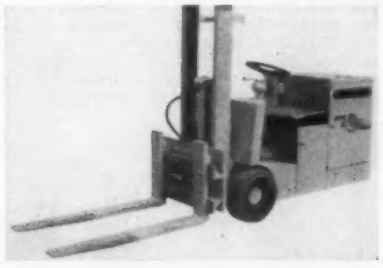
PRODUCTION PREVIEW

summarized from descriptions published during 1954

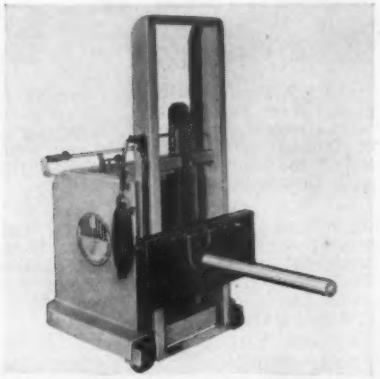


FORK TRUCK—*Automatic Transportation Co, 149 W 87th St, Chicago 20, Ill.* Approved by Underwriters' Laboratories for use in hazardous locations involving fire or explosion. Trucks are Type EX, available in 2000, 3000 or 4000 lb-capacity models.

CONTROL GROUP—*Automatic Transportation Co, 149 W 87th St, Chicago 20, Ill.* Transveyor fork lift trucks are now equipped with one-hand grouping of controls incorporating a rotary speed controller.



FORK TRUCK—*Barrett-Cravens Co, Crescent Truck Div, 4609 S Western Blvd, Chicago 9.* Lo-Hed electric unit provides protection against low overhead clearance objects. Has 48-in. lift; capacities of 2000, 3000, and 4000 lb.



LIGHT TRUCK—*Big Joe Mfg Co, Chicago 7.* Counterweighter lifts 1000 lb; forks can be replaced with ram or roll attachments. No front straddle.

FORK LIFT TRUCKS — *Automatic Transportation Co, 149 W 87th St, Chicago 20, Ill.* Built-in centralized lubrication by a Multi-Luber manufactured by Lincoln Engineering Co.

MAST—*Automatic Transportation Co, 149 W 87th St, Chicago 20.* Triple telescopic, permits 198-in. tiering by standard 83-in.-high fork truck; capacities from 2000 to 10,000 lb.

LIFT TRUCK—*Big Joe Manufacturing Co, 900 W Jackson Blvd, Chicago 7, Ill.* Telescopic, battery-operated hydraulic; stacking height, 110 in.

HIGH LIFT—*Big Joe Manufacturing Co, 900 W Jackson Blvd, Chicago 7, Ill.* Foot-operated models have working height of 80 in., to assist in handling ceiling-to-floor objects.

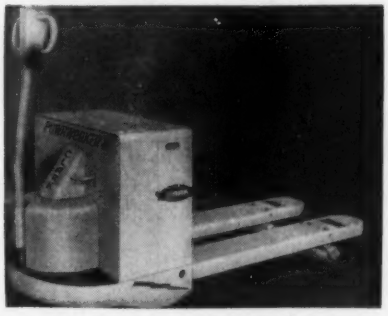
LIFTING PUMP—*Big Joe Manufacturing Co, 900 W Jackson Blvd, Chicago 7, Ill.* On Big Joe foot-operated trucks for loads to 250 lb., triples speed raising from 1⅛ to 3½ in. per foot-stroke.

PUSHBUTTON CONTROL—*Big Joe Manufacturing Co, 900 W Jackson Blvd, Chicago 7, Ill.* Allows operator to ride top of lift on forks or platform, at increased lifting speed of 40 fpm.

LIFT TRUCKS—*The Buda Co, Div of Allis-Chalmers Mfg Co, Harvey, Ill.* FTP40-24 (gasoline) and FTPD40-24 (diesel) are rated at 4000-lb capacity at 25-in. load center. Gasoline unit is powered with Buda 4-cylinder, 49-hp engine. The other is powered with a 4-cylinder, 40.5-hp diesel engine.

LOAD PUSHER—*Elwell-Parker Electric Co, Cleveland 3.* Hydraulic double-pantograph screen pushes loads off truck to eliminate pallets. Linkages equalize forces to pantographs.

FORK TRUCKS—*Clark Equipment Co, Battle Creek, Mich.* Underwriters' Laboratories-approved Electric Carloader series for operation in hazardous areas; capacities 3000 to 5000 lb. Units have rating approval for operation in atmospheres containing explosive vapors.



POWERED HAND TRUCKS—*Clark Equipment Co, Industrial Truck Div, Powrworker Section, Battle Creek, Mich.* Powrworker 26 line incorporates short over-all length, max load stability. Spring-applied brake actuates dead-man switch, automatically breaking power circuit when steering handle is in vertical or horizontal position.

SWINGING CLAMP—*Clark Equipment Co, Industrial Truck Div, Battle Creek, Mich.* Can reach either side of narrow aisle to tier loads behind material already stacked. For use with gas and electric-powered Carloader models of trucks. Maximum capacity of attachment is 600 lb, regardless of truck capacity.

FORK TRUCKS—*Clark Equipment Co, Battle Creek, Mich.* Gas-powered Carloaders in 3000-5000-lb capacities available with optional Hydratork drive, a transmission which eliminates need for gear shift, high and low gears, and clutch and clutch pedal.

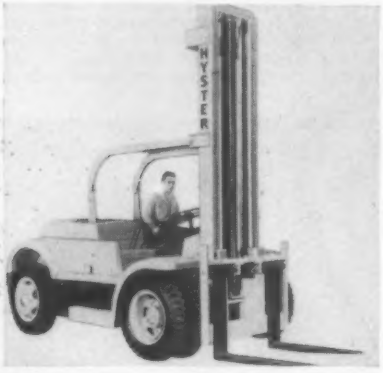
BATTERIES—*Battery Div, Chicago Forging & Mfg Co, 1317 W North Ave, Chicago, Ill.* Varley VIS 12½-in. plate and Varley VIL 16-in. plate industrial batteries. Plates extend to bottom of battery; separators end shedding and electrolyte splash.

ELECTRIC FORK TRUCK—*Elwell-Parker Electric Co, 4205 St Clair Ave, Cleveland 3, Ohio.* 10,000-lb-capacity hydraulically operated truck has front-wheel drive, rear-wheel steer, designed for tiering with telescoping lift, and tilting. Equipped with 42-in. fork.

CENTRALIZED LUBRICATION—*Elwell-Parker Electric Co, 4205 St Clair Ave, Cleveland 3, Ohio.* Lincoln Engineering Centro-Matic centralized lubrication system is incorporated in Elwell-Parker electric trucks. The system works under pressure of 2500 psi; indicator stem on each injector provides evidence that grease is properly metered.

STORAGE BATTERY—*Thomas A Edison, Inc, Edison Storage Battery Div, West Orange, NJ.* MC-type for trucks in which space available for battery is limited. Standard assemblies from 10-cell MC4, rated capacity 3.42 kwhr to 42-cell MC10, 35.78 kwhr.

STORAGE BATTERIES — *General Communications, Inc, 1420 E 25th St, Cleveland, Ohio.* Vita-Plate long-life storage batteries for gas-powered industrial trucks have extra-heavy plates.



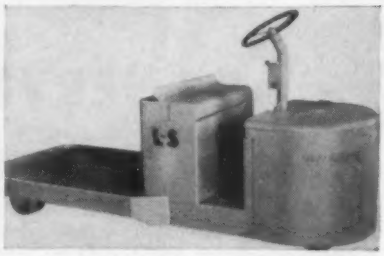
LIFT TRUCK—*Hyster Co, Portland 8, Ore.* Capacity of 15,000 lb at 24-in. load centers and is reported to have extremely short over-all length and narrow width.

BATTERY UNIT — *K-W Battery Co, 2670 W Howard St, Skokie, Ill.* For powered lift trucks; equipped with permanently mounted charger which plugs into standard power supply.

BATTERY CHARGERS—*The Lincoln Electric Co, Cleveland 17, Ohio.* For Edison industrial truck batteries. Three models cover charging requirements for batteries of 10 to 42 cells. Machines give constant current charges.

HAND TRUCK — *Nutting Truck & Caster Co, 1125 W Division St, Faribault, Minn.* Fig. 1152 has improved glides for better balanced traversal up and down curbs or stairs.

TRUCK — *Economy Engineering Co, 4511 W Lake St, Chicago 24.* WL-F fork model Worklifter, raises and lowers at 34 fpm. WL-F58, with height of 6 ft 6 in., fork lift of 58 in.; WL-F78, with height of 8 ft 2 in., fork lift of 78 in.; handle pallets up to 36 in. long, 42 in. wide.



ELECTRIC TRUCK — *Lewis-Shepard Products, Inc, Dept R-50, Watertown, Mass.* Model J is battery-powered and will carry up to a ton at speeds of 5 to 6 mph.

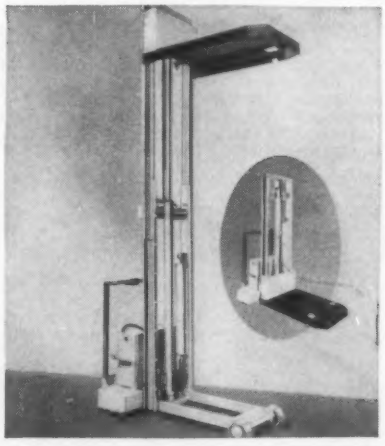
BATTERY-OPERATED HOISTER — *Lewis-Shepard Products, Inc, Dept R-43, Watertown, Mass.* Electro-hydraulic stacker of 1000-lb capacity in two models. Platform type has carrying platform 3 in. long by 24 in. wide. Straddle model has forks either 30 or 36 in. long and can handle pallets up to 48 in. long. Lifting height of both models is 58 in.

LIFT TRUCK—*Lewis-Shepard Products, Inc, Dept R-45, Watertown, Mass.* SpaceMaster Model "M" has side entry; wrap-around compartment of reinforced steel shields driver against collision. High lift models have capacities of 2000 and 3000 lb; low lift, 4000 lb.

TRUCK — *Lewis-Shepard Products, Inc, Dept R-46, Watertown, Mass.* Two styles—one for in-floor dragline conveyors and one for overhead. Adjustable drop pin makes engagement and release from dragline.

ADDED TRUCK LIFT—*Lewis-Shepard Products, Watertown, Mass.* Compound carriage adds 14 in. extra lift to Spacemaster electric truck. Unit adds short extra mast to assembly; no increase in collapsed height.

FORK LIFT ATTACHMENT—*Lewis-Shepard Products, Dept R-42, Watertown, Mass.* Overhead clamp with side shifter for use on Lewis-Shepard electric fork trucks clamps cartons from top and bottom. Clamping and shifting hydraulically controlled from cab seat.



LIFT TRUCK—*Lift Trucks, Inc, Cincinnati 14, Ohio.* Model HHP handles narrow skid platforms for tiering to heights of 108 in. It has a powered telescopic lift for tiering up to 2000 lb.

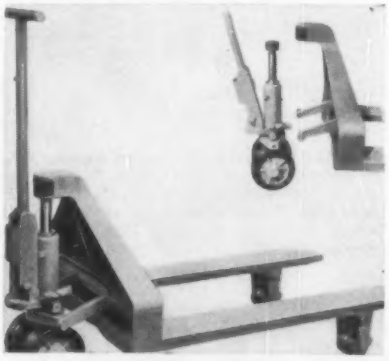
HAND TRUCK — *Magline Inc, 1950 Mercer St, Pinconning, Mich.* Model 12-H-802 handles loads up to 450 lb, weighs only 16 lb when equipped with rubber-tired magnesium wheels. Shovel nose, 12 in. long, moves bulky packages and cartons.

TRACTOR LIFT—*Market Forge Co, Everett 49, Mass.* Allows hand-propelled floor trucks or semi-skids to be handled by power. Standard Load Mobile tractor has been designed to incorporate electro-hydraulic unit for lifting and lowering by pushbutton control.

TELESCOPIC MAST DESIGN — *Market Forge Co, Materials Handling Div, Everett 49, Mass.* Market Forge load-carrier truck. Mast is quickly and easily raised by one hand and automatically locks in position. It engages with special coupler attached to chain conveyor.

PALLET LOAD LIFTS — *Market Forge Co, Materials Handling Div, 35 Garvey St, Everett 49, Mass.* 2,000-lb capacity units require 30-lb pull on level hard concrete floor, 25-lb force on lifting handle to raise load. The trucks have an overall width of 22 in., width of forks of 7¼ in., opening 7½ in.

ELECTRIC TRACTOR—*Mercury Mfg Co, 4044 S Halsted St, Chicago 9.* Model 550 Tug has twin-three or four-wheel design, 2500- or 3000-lb pull capacity. Seat-actuated parking brake, four-speed control, timed acceleration.



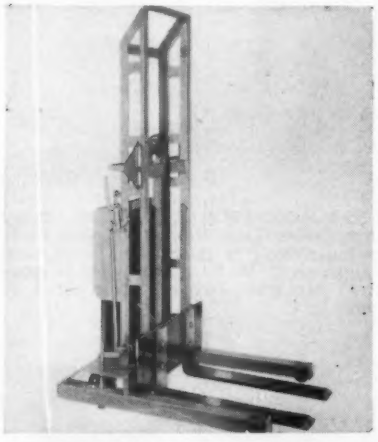
PALLET TRUCK—*Paliton, Inc, 40 W 29 St, New York 1, NY.* Lift of 5 in. with hydraulic pump, and lowering at controlled speeds. Trucks are marketed in 2600 and 4000-lb capacities with fork widths of 20½ to 27 in.

BARREL-HANDLING ATTACHMENT — *The Raymond Corp, 57-124 Madison St, Greene, NY.* On Reach-Fork trucks, stacks from aisles 6 ft wide. Loads of up to 1000 lb can be multiple-stacked.

FORK EXTENSIONS—*The Raymond Corp, 47119 Madison St, Greene, NY.* On Raymond Reach-Fork trucks. Inside load can be reached by extending forks through scissors-design mechanism.

PILOT TRUCK—*The Raymond Corp, 47-123 Madison St, Greene, NY.* Rider-type with 8 load wheels arranged in dual, tandem fashion.

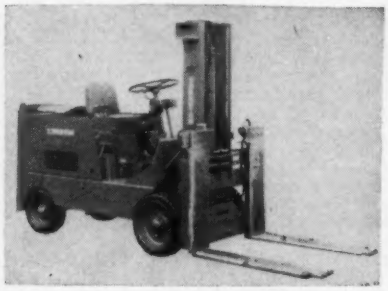
NARROW TRUCK—*Raymond Corp, 47-120 Madison St, Greene, NY.* Modified straddle truck with 4 base legs; operates in 6-ft aisles; raises to 158 in.



ELECTRIC LIFT TRUCK — *Safeway Industrial Equipment Corp, 184 N Franklin St, Chicago 6, Ill.* EL-20 designed as 4-in-1 unit; operates as forklift, straddle-lift, platform lift, and drumstacker, with lifting capacity of 1250 lb.

TRUCK BRAKE — *Towsley Trucks, Inc, 1766 Elmore St, Cincinnati 23, Ohio.* Stops truck instantly when operator removes hands from control bar conveniently located on push handle. Insures safer wheeling on inclines and ramps.

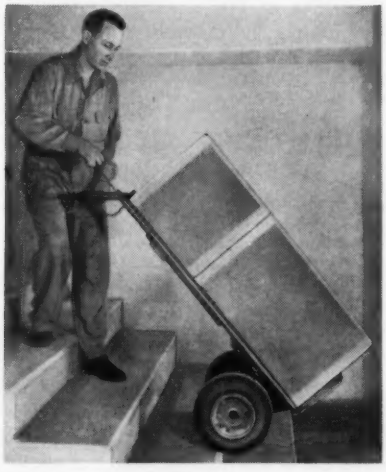
DOUBLE TELESCOPIC MAST—*Towmotor Corp, Cleveland, Ohio.* For Towmotor lift-trucks for extreme lowering, mast permits same truck to be used both for entering and loading or unloading in box-cars and highway trailers.



ROLL-OFF DEVICE — *Towmotor Corp, 1226 E 152nd St, Cleveland 10, Ohio.* Accessory to aid in storing lengthy loads lengthwise. Consists of two hollow forks with a roller attached to the outside edges; units fit sheathlike over standard Towmotor forks. Device is connected to main hydraulic system.

FORKS—*Towmotor Corp, 1226 E 152nd St, Cleveland 10.* Hydraulically adjustable from side to side, speed handling when variety of different widths of pallet loads must be handled.

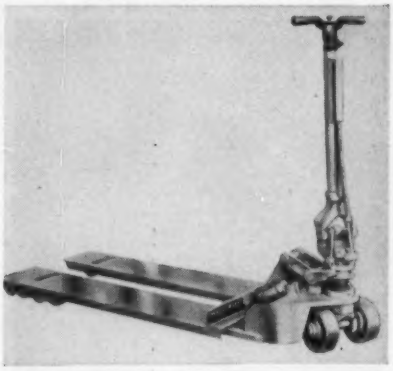
CLAMP ATTACHMENT — *Towmotor Corp, 12226 E 152nd St, Cleveland 10.* Crate Clamp, for fork trucks, handles crated material; prevents damage to boxes or contents.



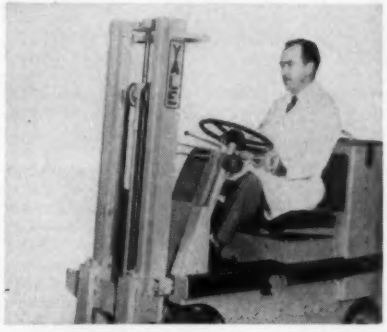
HAND TRUCK—*Valley Craft Products, Inc, Div O'Neil-Irwin Mfg Co, Lake City, Minn.* Two-wheel truck has power ratchet drive to advance it up steps as operator pulls cable. Two-wheel brakes safe to 500 lb load.

SCOOTER CAR—*Victor Adding Machine Co, Chicago 18.* Three models; scooter for carrying hand tool, Lugger with 1000-lb rear deck, Courier for transporting single passenger.

MUFFLER—*Yale & Towne Mfg Co, Materials Handling Div, Philadelphia 15, Pa.* Eliminates discharge of ignited solids in exhaust gases of gas or diesel trucks.



PILOT LIFT TRUCK—*West Bend Equipment Corp, 435 Water St, West Bend, Wis.* Pal Boy, 2500-lb capacity, in 24 and 27-in. widths and 36, 40, 42, and 48-in. fork lengths. Revolves in 360° swivel.



ELECTRIC FORK TRUCK—*Yale Materials Handling Div, Yale & Towne Mfg Co, Philadelphia, Pa.* Mast height is 68 in.; equipped with dead-man control. Built on 50-in. wheelbase has 36-in. forks, pivots around 90° corner in 61-in. aisle, forks are adjustable from 10 to 31½ in.

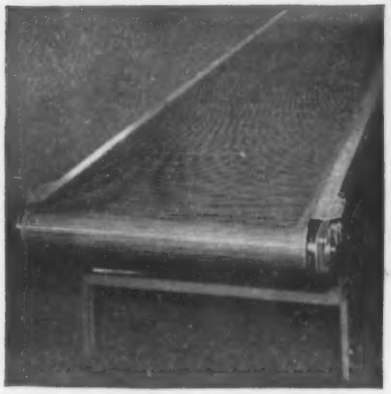
GASOLINE TRUCKS — *The Yale & Towne Mfg Co, Philadelphia.* G-52 Series, in 2000, 3000, and 4000-lb capacity models. Smallest can turn right-angle in 57-in. aisle or right-angle stack in 112-in. aisle. With telescopic lift, fork height is 144 in.

WAREHOUSE TRUCK — *Yale & Towne Mfg Co, Philadelphia.* Fork truck works in 7-ft aisle, lifts 2000 lb, lifts to 126 in., handles pallets, skids.

GRIPPER-ARM TRUCK — *Yale & Towne Manufacturing Co, 11,000 Roosevelt Blvd, Philadelphia 15, Pa.* Extend-A-Load truck, equipped with Rheem gripper arms, can reach out and select loads which can be hoisted 124 in. and are retracted or extended by push-button.

ENGINE CUTOFF — *Yale Materials Handling Div, Yale & Towne Manufacturing Co, Philadelphia, Penna.* Connected with fork truck operator's seat; when operator is out of seat engine automatically stops after three minutes of idling and brake is automatically applied.

ELECTRIC TRUCK — *The Yale & Towne Mfg Co, Philadelphia.* Can now be used near radio or radar installations. Electrical circuit utilizes capacitors, which eliminate sparking of commutator contacts.

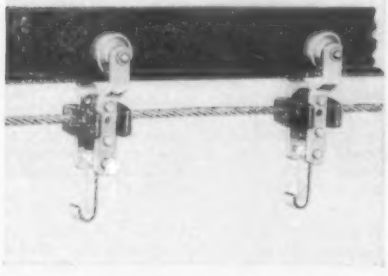


BELT CONVEYORS—*Sage Equipment Co, 30 Essex St, Buffalo 13, NY.* Series of power-driven, wire-mesh belt conveyors includes wide variety of widths and lengths. Can be operated at constant or variable speeds.

CONVEYOR GATE—*Sage Equipment Co, 30 Essex St, Buffalo 13, NY.* Counter-balanced air-operated gate for use across aisles. Pushbutton on either side of gate permits operator to actuate raising and closing.

CONVEYOR UNITS—*Sage Equipment Co, 30 Essex St, Buffalo 13, NY.* Supplied as single-wheel rails, units can be spaced to suit individual requirements—may be bolted to table or floor. In 5 and 10-ft sections.

CONVEYOR FRAMES—*Sage Equipment Co, 30 Essex St, Buffalo 13, NY.* Permit repositioning of rollers to suit changing requirements. Multiple spacing on various centers, such as 3, 6, 9, 12 in.



CABLE CONVEYOR—*The E W Buschman Co, 4364 Clifton Ave, Cincinnati 32, Ohio.* Bush-Lock design is said to increase cable life 30 times, facilitate lubrication. Shorter radius horizontal and vertical curves permit more compact layout. Both ¼ and ⅜-in. conveyors operate on existing snub-lock design systems.

CABLE CONVEYOR UNIT—*The E W Bushman Co, 4364 Clifton Ave, Cincinnati 32, Ohio.* DipAid unit for systems handling parts through dipping operations. Positioned in system immediately following dip tank, unit imparts variety of motions to product to aid in securing more even distribution of finish.

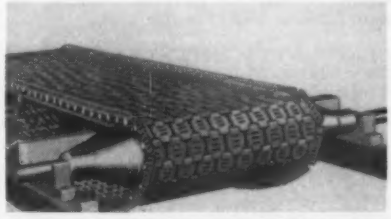
CONVEYOR BELTS—*B F Goodrich Co, Akron, Ohio.* Light-weight CP fabric used has high moisture resistance. Koroseal belt resists abrasion, oil, grease, and most acids. Highseal and Kleenseal belts are green for eye comfort; economy type is black.

CONVEYOR BELT—*F B Wright Co, 1565 Oakman Blvd, Detroit 38, Mich.* Cleat is vulcanized in one piece with belt, eliminating seams and gaps between cleat and belt.

APRON CONVEYORS—*Link-Belt Co, 307 N Michigan Ave, Chicago 1, Ill.* Line of piano-hinged apron conveyors in three pan types, four chain pitches, and four basic assemblies. Pans are interlocked at articulation point.

GRAVITY CONVEYOR TIRES—*The Rapids-Standard Co, Dept BT, 342 Rapistan Bldg, Grand Rapids 2, Mich.* Shock-absorbing, ribbed neoprene for use on wheels to handle fragile materials and instruments. Can be installed on curved and straight sections of conveyor.

CONVEYOR — *Hewitt-Robins, Inc, Stamford, Conn.* Small vibrating unit has speed of 38 fpm. Standard pans are 4 in. deep in widths of 8, 12 , or 18., with or without top covers.

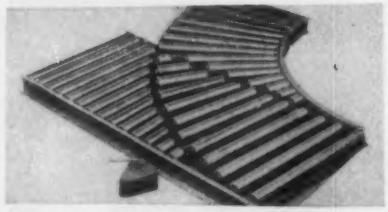


BELT-CONVEYOR — *Standard Alloy Co, Inc, 1679 Collamer Rd, Cleveland 10.* Link design; for annealing, normalizing, stress-relieving, and draw furnaces where heat circulation is essential. Widths from 18 to 60 in.

CONVEYOR—*M-H Standard Co, 515 Communipaw Ave, Jersey City 4, NJ.* Monoflo handles light loads along paths with horizontal and vertical bends. High-carbon-steel screw ¾-in. in dia turns in metal retaining rail. When load-carrying hook is placed on rail, thread of screw engages it and propels it along rail.

BUCKET CONVEYOR—*Hapman Conveyors, Inc, Kalamazoo, Mich.* Trolley consists of single I-beam which may lie in any position. Conveyor path may have turns in either or both horizontal or vertical planes.

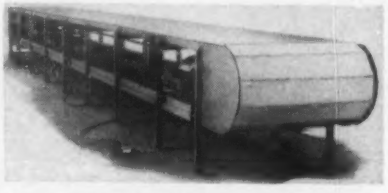
RECIPROCATING CONVEYOR—*Hydro-Blast Corporation, 2550 North Western Ave, Chicago 47, Ill.* Feeds constant volume of material from overhead bin. Operated by plant air and electric power to operate solenoid air valve.



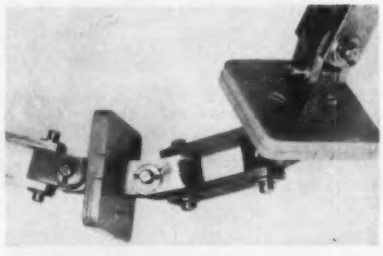
SPUR CURVE—*Mechanical Handling Systems, Inc, Detroit 26, Mich.* Switching mechanism makes two-directional control easy and positive; may be manually or remote-control operated and actuating mechanism may be solenoid, air ram or hydraulic ram, or manual.

BREAKER STRIP—*U.S. Rubber Co, Rockefeller Center, New York 20, NY.* For conveyor belts; uses nylon in warp direction, and cotton in filler direction.

RAYON BELTS—*U.S. Rubber Co, Rockefeller Center, New York 20, NY.* Greater strength than cotton duck belts, with 1/3 less weight.



BELT CONVEYOR — *West Bend Equipment Corp, West Bend, Wis.* Steel belt conveyor is 12 to 60 in. wide, any length over 10 ft, fitted with 14-gage steel sections. Drive section is 5 ft long.

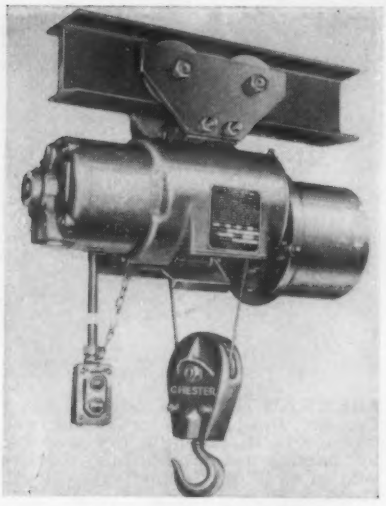


CONVEYOR — *Prab Conveyors, Inc, 19815 E Nine Mile Road, St Clair Shores, Mich.* Totally enclosed bulk-material-handling conveyor has two-directional chain to convey in any direction. Material is conveyed through square tubular section by two-piece spaced metal flights.

CONVEYOR "Y"—*Harry J Ferguson Co, Jenkintown, Penna.* Roller-conveyor Y section has straight side, 90° radiused turn, powered by ½-hp geared motor.

TELESCOPIC GRAVITY CONVEYOR—*The Wilkie Co, 5520 Arch St, Philadelphia 39, Pa.* The 10-ft telescoping sections join each other only at one universal roller-bearing point, can be extended with light hand pressure up to 40 ft.

POWERED CONVEYOR — *Rapids-Standard Co, Grand Rapids, Mich.* 10-ft lengths of live conveyor can make up line 150 ft long; widths range from 15 to 39 in. Speeds, 80 fpm standard, 60 to 200 fpm optional.

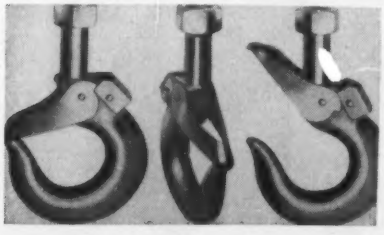


ELECTRIC HOISTS—*Chester Hoist Div, National Screw & Mfg Co, Lisbon, Ohio.* Basic design features are high torque electric motors with 30-minute 55 C time rating; triple reduction gearing under continual lubrication; dual braking, on load and motor, for precise spotting control and maximum safety.

CHAIN HOIST—*Ampco Metal, 1745 S 38th St, Milwaukee 46, Wis.* One-ton chain hoist is non-magnetic, spark-resistant, for use in location where hoists of ferrous materials have proved unsuitable. It is of spur gear, ball bearing type.

TRAILER—*Mercury Mfg Co, 4044 S Halsted St, Chicago 9.* Caster-Steer, 4000-lb capacity, for overhead tow systems has 3x6-ft deck and is fitted with stake pockets at both sides and rear for standard removable pipe racks.

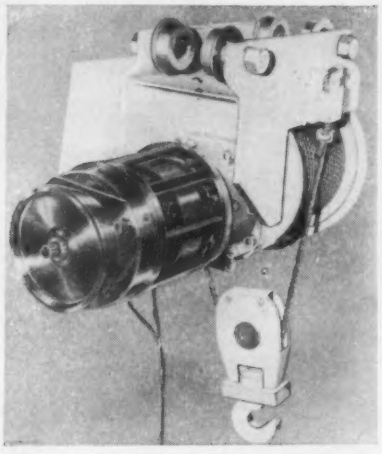
DRUM LIFTER—*Palmer-Shile Co, 16019 Fullerton, Detroit 27.* Handles open and closed steel drums in vertical or horizontal position by crane or hoist.



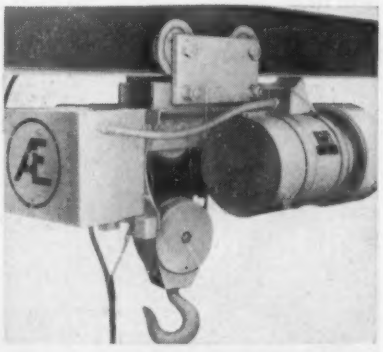
SAFETY HOOK — *Coffing Hoist Co, Danville, Ill.* Once hook is engaged, stamped steel latch swings down and is securely held in place by lock under spring tension.

ELECTRIC HOIST—*Coffing Hoist Co, Danville, Ill.* Cable hoists with capacities from 500 to 4000 lb. Choice of lifting speed and type of suspension.

COIL CRADLE—*Wm Halpern & Co, 100 Stevens Ave, Mount Vernon, NY.* Powerdriven pinch rolls uncoil stock; rolls are spring-loaded. Material up to ⅛ in. thick can be fed to the press automatically.



ELECTRIC HOIST—*R J LeTourneau, Inc, Longview, Texas.* All-steel, welded construction; 4-, 5-, and 6-ton hoists equipped with ac motors and gear reduction units. Positive load control with bi-metallic friction brake synchronized with pushbutton control.



ELECTRIC HOIST—*American Engineering Co, Aramingo Ave & Cumberland St, Philadelphia 25.* Lo-Head, with welded steel chassis, in 2- and 3-ton capacities. Has drum on one side, motor on other; straight-line 3-reduction spur gears, automatic Westing heavy-duty lowering brake.

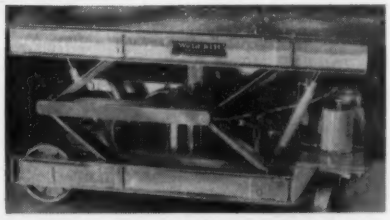
HOIST—*Shepard Niles Crane & Hoist Corp, Montour Falls, NY.* Wire rope, Lift About-Jr for intermittent duty; ¼ to 1-ton capacities. Speeds from 12 to 25 fpm on dc-operated types. 20 to 37 on ac. Max lift is 16 ft on hook suspension units, 20 ft on all other frame sizes.

CRANES—*Industrial Crane & Hoist Corp, 315 N Ada St, Chicago 7.* Push-type; light-duty model in 5 different capacities; heavy-duty model in 7.

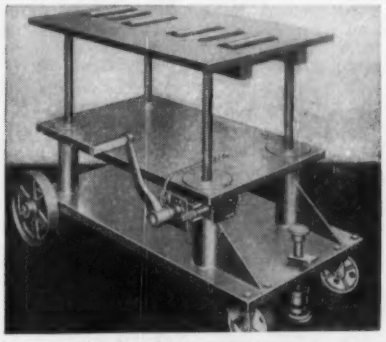
PORTABLE LIFT TABLE — *Lange Lift Co, 4275 North 124th St, Milwaukee 10, Wis.* 1000, 2000, 4000, and 6000-lb capacities. Lift, hold, and lowering is accomplished through use of two-speed hydraulic foot pump; down stroke permits bench-line positioning.

ELEVATOR UNITS — *West Bend Equipment Corp, 335 Water St, West Bend, Wis.* For automatic production lines; fitted with solenoid-operated selectors, may be adjusted to accept or pass by parts or packages according to weight or size.

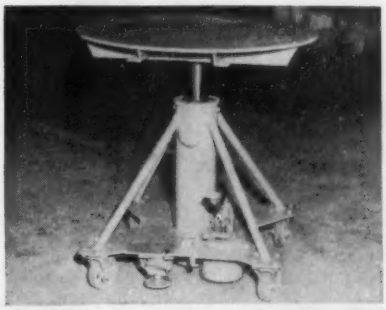
PORTABLE TABLE LIFT — *West Bend Equipment Corp, 335 Water St, West Bend, Wis.* Flat steel swivel top; handles heavy jigs and dies to 2000 lb. Mounted on large ball bearing wheels and raised hydraulically with foot pump.



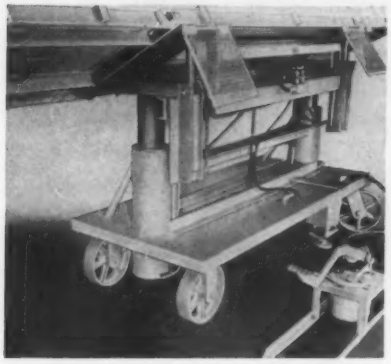
HYDRAULIC LIFT TABLE—*West Bend Equipment Corp, Water St, West Bend, Wis.* To handle heavy dies, machined parts, or sheet steel. Loads to 5 tons raised 42 in. Lifting mechanism consists of four cylinders fed from central hydraulic unit.



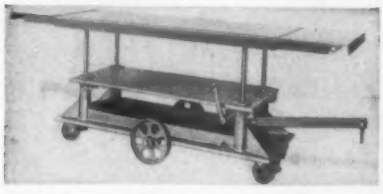
ELEVATED TABLE—*Hamilton Tool Co, Hamilton, Ohio.* Portelvator; table has capacity of 2000 lb and vertical travel of 14 in. Minimum height from floor is 20 in. and max height 34 in. It is elevated by hand crank from side; table surface is 18x20 in.



REVOLVING TABLE — *Raymond Corp, 47-121 Madison St, Greene, NY.* Height, 28 to 44 in; capacity, 200 lb; hydraulic elevation; used at intersecting conveyor lines.

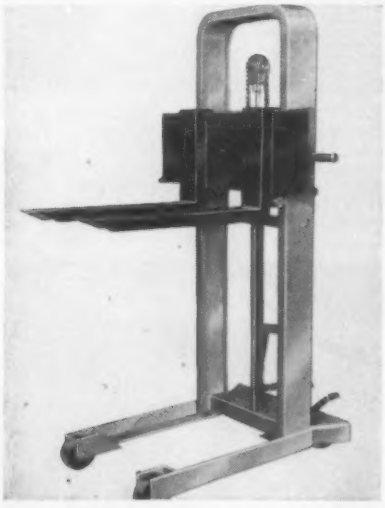


SHEET-FEEDING TABLE—*Rack Hydraulic Equipment Corp, Connellsville, Pa.* For fast stock feeding into inclinable bed press; 3-ton capacity unit has hydraulically activated tilt top. Operated by two-speed foot pump with two-way valve controlling both tilt and straight elevation of table.



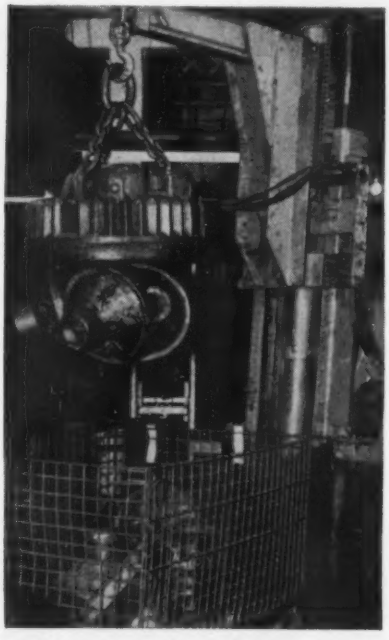
PORTABLE TABLE—*The Hamilton Tool Co, 830 S Ninth St, Hamilton, Ohio.* Portelevator has 26x72-in. table adjustable from 24 to 38 in. above floor, and drop leaves that extend it to 108 in. long. Capacity in narrow sheet or strip stock is 5000 lb.

INDEXING DIALS—*Roller Gear Div, Ferguson Machine & Tool Co, Box 191, St Louis 21, Mo.* Index tables have Ferguson roller gear drive. Indexing periods are possible at any portion of the cycle.

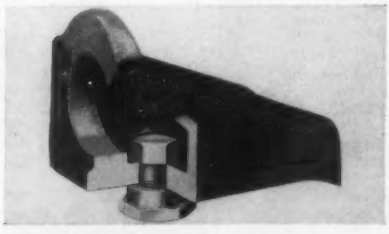


HYDRAULIC LIFTS—*Lee Engineering Co, Pawtucket, RI.* Platform and fork lifts; manually and electrically operated models; capacity, 1000 lb. Model M266 (one of 20) has lifting height of 66 in. Over-all height is 80 in.; forks adjustable from 8 to 32 in.; fork length, 26 in.

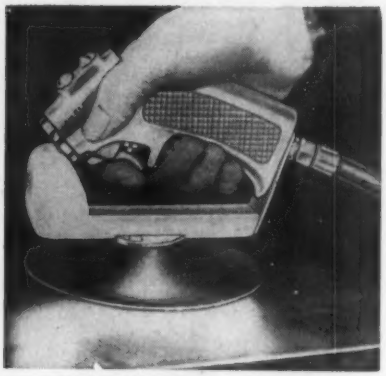
LIFT MAGNET—*Sundstrand Magnetic Products Co, Div Sundstrand Machine Tool Co, 1020 Ninth St, Rockford, Ill.* Powered by common 6-v automobile battery, can lift 2000 lb of finished mild steel. Lift has a magnetizing surface of 7x12½ in., height of entire unit is 12½ in.



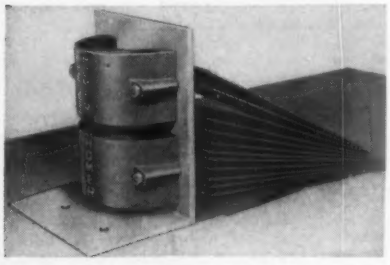
ELECTRO-MAGNETS—*Electric Controller & Mfg Co, 2781—79th St, Cleveland 4.* For use with boom-equipped gas or electric trucks. Sizes from 12½ to 36 in. in dia, weighing from 155 to 1900 lb.



DIE-LIFTING TOOL—*R H Froom & Co, Gardena, Calif.* To hoist heavy dies to melting pots. It attaches firmly to die by means of attachment bolts.



SHEET LIFTER—*F J Littell Machine Co, Air Div, 4555 Ravenswood Ave, Chicago 40, Ill.* Lifting power produced by passing compressed air through venturi at 45 psi. Suction cup will pull 11 psi.

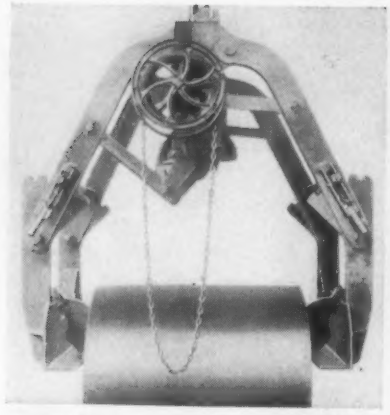


SHEET FLOATER—*Homer Mfg Co, Inc, Dept 131, Lima, Ohio.* Handles irregular or off-shaped stacks of steel sheets. Three sizes handle sheets from 14-mil stock to ¼-in. plate. Alnico 5 permanent magnets.

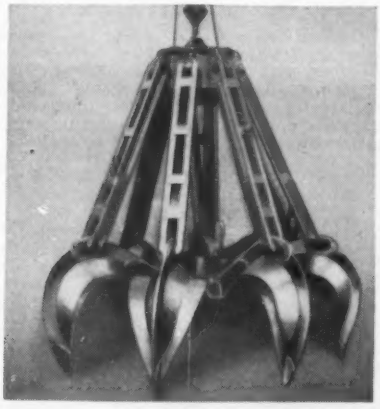
LIFTING TOOL—*Standard Portable Cord Co, Jamestown, NY.* Magic Pick-Up Tool for ferrous metal sheets has a 20, 30, or 45-lb lift neoprene-covered Alnico 5 magnet set in a high-tensile aluminum handle.

SEPARATOR—*Basco Mfg Co, 5 Woodside St, Stamford, Conn.* No. 52 midget model for handling light metal sheets is 5 in. high, 3¼ in. wide, with base of mounting plate extending back 1¾ in.

PULL CLAMP—*Lapeer Mfg Co, Detroit 2, Mich.* Can be used to pull in regular hook-fashion or simply hooked over an angle iron.

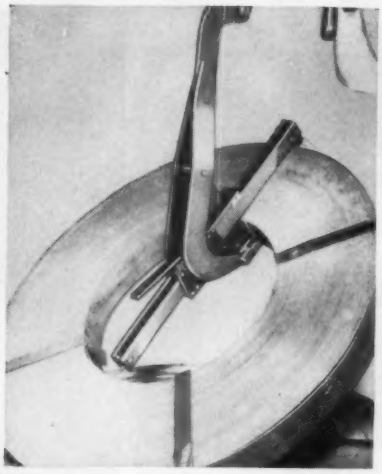


LIFTER—*Cullen-Friestedt Co, 1300 S Kilbourn Ave, Chicago, Ill.* Handles sheet and coil stock; has 20,000-lb capacity; incorporates hinged-coil bearing segment at center of each carrying angle.



GRAPPLE — *Ruhr Industries, 1411 Walnut St, Philadelphia, Pa.* Scheidt grapple is produced in capacities ranging from 0.4 to 3.3 cu yd. Outstanding feature is floating action of slideways which activate all grasping tines.

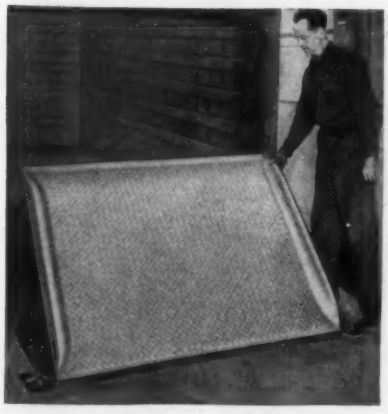
DRUM LIFTERS—*Merrill Bros, Arnold Ave, Maspeth, NY.* Attached to 2-part chain sling, convey 4 drums in one lift. Each has rated load of 10,000 lb.



COIL GRAB — *Dixon Automatic Tool Inc, 2300—23rd Ave, Rockford, Ill.* 1,000-lb grab with 5-to-1 safety factor; for coils up to 8 in. in width. It is semiautomatic and requires one man.

PERMANENT MAGNET—*The Indiana Steel Products Co, Valparaiso, Ind.* Indox is composed of ceramic material and is a non-conductor. Suited for uses with limited magnetic lengths and in which magnet is subject to high demagnetizing forces.

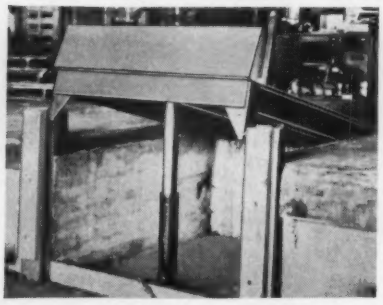
SHEET FLOATERS—*Dings Magnetic Separator Co, 4740 W Electric Ave, Milwaukee 46, Wis.* Three magnetic strengths and four heights are capable of handling 28- through 10-gage blanks up to 30x20 in.



MAGNESIUM DOCK BOARD—*Magline, Inc, Pinconning, Mich.* Recessed dock installation permits unit to self-adjust truck level and compensate for truck spring deflection. Magliner safety curb prevents power-truck wheels from colliding with curb rail.

LOADING RAMP—*Penco Engineering Co, 25 California St, San Francisco 11, Calif.* Magnesium ramp has 4000 to 16,000-lb capacity, 60 or 70 in. wide, with fixed wheels or hydraulic lift; adjustable within 38 to 55-in.

PALLET-STACKING—*Stak-Mor Sales Co, 1931 Olive St, St Louis 3, Mo.* System allows materials of almost any size or shape to be stacked in tiers. Vertical supports and self-aligning permit storage two or more tiers high.



LOADING RAMP—*Cemco Industries, Inc, Galion, Ohio.* Hydraulically operated; designed to speed movement of load from dock to truck; consists essentially of a 7- or 8-ft long hinged section of loading dock which can be raised 12 in. below dock level.

CARRYING SYSTEM — *Cleveland Tramrail Div, Cleveland Crane & Engineering Co, Wickliffe, Ohio.* Picks up and moves one carload of metal chips and shavings daily. Scrap from machines is emptied into two parallel tunnels in the ground. Each tunnel has its own track on which a carrier travels.

STEEL CASTER—*Rolawheel Co, 1757 West Grand Ave, Chicago, Ill.* Non-locking steel caster employs curved axle with dual ball-bearing sockets. Standard 1½ to 2½-in. wheel diameters.

CASTER — *Midwest Precision Corp, Jackson, Mich.* Top plate and upper raceways are of separate detail. Fully heat-treated; cadmium-plated; ⅝-in. king pin.

CASTERS—*The Bassick Co, Bridgeport, Conn.* Medium-duty, have shock-absorbing floating-hub design for load and floor protection. Handle loads from 100 to 700 lb.

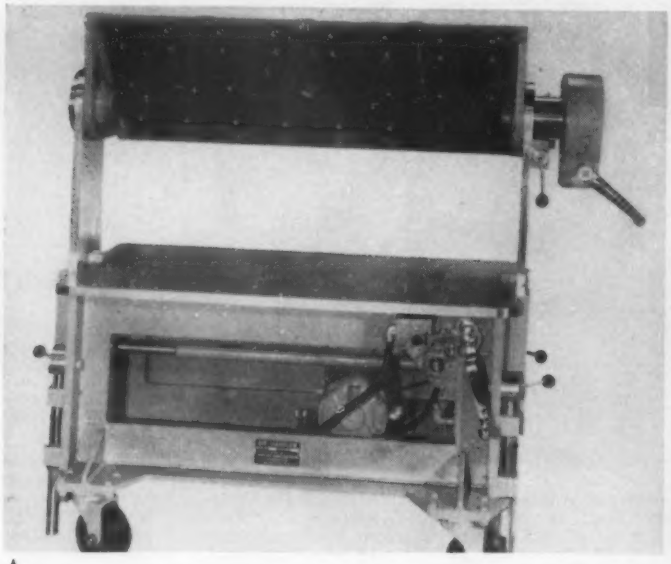
MATERIALS-HANDLING — *Clark Equipment Co, Battle Creek, Mich.* Pul-Pac push-pull attachment permits use of thin carrying sheet. Pusher device eliminates manual unloading of cartons, bags, drums, or other material stored on pallets.

TRAILER—*Mercury Mfg Co Chicago, Illinois.* 3000-lb capacity unit with two roller conveyor sections at a height of 30 in. Fits into standard conveyor lines; live deck is made of two 6-roller sections.

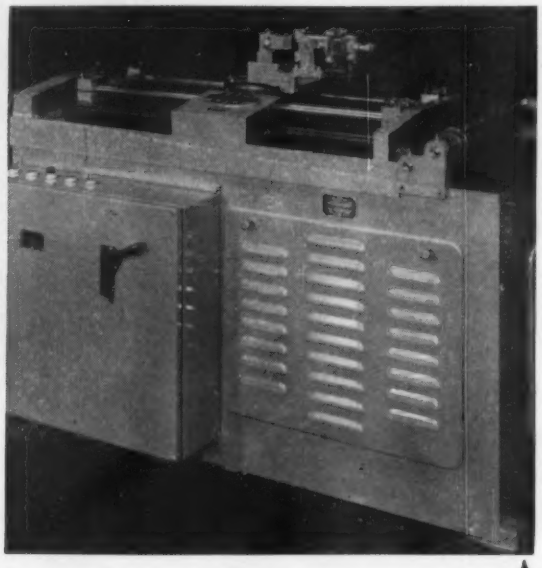
CONVEYING EQUIPMENT — *Western Gear Works, PO Box 182, Lynwood, Los Angles County, Calif.* Tug-Bar is available in a 24-v, dc model. The 110-lb device moves loads in excess of 2 tons.

POWER FEED — *American Pullmax Co, 2455 North Sheffield Ave, Chicago 14, Ill.* For use on the Pullmax Major, Models P-5 and D-3, to aid in cutting and working steel plate up to 11/32 in. thick.

PLANT SERVICE EQUIPMENT—misc materials handling



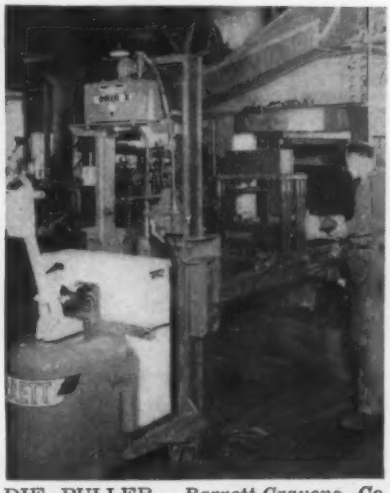
DIE HANDLER—*Hansford Mfg Corp, 1239 University Ave, Rochester 7, NY.* Handles dies to 24 in. wide and 43 in. long. Motor drives through belt which slips in case solid obstruction is encountered. Motorized lift provides for rapid positioning and fine adjustments are made with hand crank.



STOCK FEED—*US Tool Co, Inc, Ampere, E Orange, NJ.* Model SFC-24-24 will feed material up to 24 in. wide in lengths to 24 in. at one stroke. Has electrically controlled air-operated grippers, counter, and 3-hp motor; has no mechanical connection to press.

MATERIALS HANDLING SYSTEM—*Lamson Corp, Syracuse, NY.* Integrated system for handling packaged products from the sealing machine to shipping platform. Conveyors bring packaged goods to automatic pallet loader. The loader stacks and moves loaded pallet onto storage conveyor.

POWER UNITS—*Sage Equipment Co, 30 Essex St, Buffalo 13, NY.* Convert idle gravity roller conveyors to powered belt or live roller units.



DIE PULLER — *Barrett-Cravens Co, 4609 S Western Blvd, Chicago 9, Ill.* Built on platform of high-lift electric truck; equipment includes pushbutton control. Die is pulled by chain run through die pullers on truck platform.

CLUTCH REEL—*A H Nilson Machine Co, 1523 Railroad Ave, Bridgeport, Conn.* A spiral spring holds back coil which is suspended and pivoted on vertical shaft. The 4-in. oscillating movement compensates for pulls on the stock thereby reducing load on feed. Overtravel of reel beyond 4 in. will automatically stop machine.

STOCK REEL—*Jaco Devices, Inc, 90 High St, Hingham, Mass.* Base for 25-in. reel changes angle of feed and allows reel to take advantage of natural spring of uncoiling stock.

SKID TURNER—*Southworth Machine Co, Portland, Me.* Capacity, 52x76 in., 5000 lb. Pushbutton controls turn skid in 3 min.

ROLL FEEDS—*Rowe Machinery & Mfg Co, Dallas, Tex.* Accurate feeds in two sizes, 2x2 in. and 4x4 in., feature factory-sealed ball bearings. Also combination straightening machine and coiled-stock cradle with clutch and brake assembly for feeding lengths of any size to presses or shears.

FREIGHT ELEVATORS—*West Bend Equipment Corp, 335 Water St, West Bend, Wis.* Prefabricated Weld-Bilt, electric, can be installed in any building. Motors lift or lower platforms or cage at rate of 39 fpm; capacities range up to 4000 lb.

CONVEYOR-BELT COATING — *Adhesive Products Corp, 1660 Boone Ave, New York 60, NY.* No. 204 Griptex is an oil-resistant liquid synthetic rubber coating, applied by brush or spray to new or old belts.

misc materials handling—PLANT SERVICE EQUIPMENT

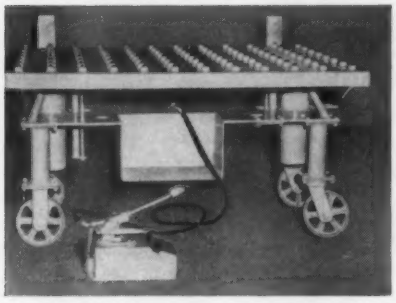


PLATE POSITIONER—*The Raymond Corp, 328-127 Madison St, Greene, NY.* Ball transfers are set into table top on 6-in. centers, allowing one man to position plates weighing 2000 lb. Elevated height adjustable from 36 to 48 in.

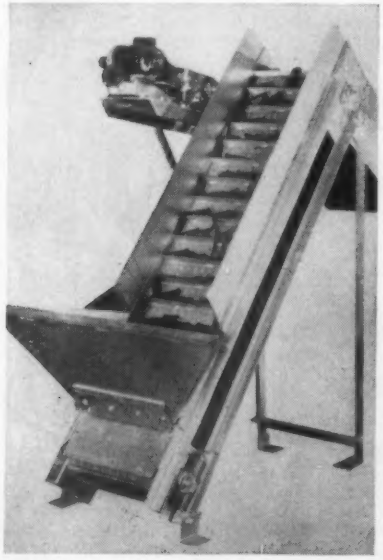
BANDSAWING AID — *Montgomery Tool, 7 Tichenor Lane, Newark 5, NJ.* Ball-bearing parallel eliminates friction between plate and saw platform.

BATTERY HANDLER — *Gould-National Batteries, Inc, Stone & Calhoun Sts, Trenton 7, NJ.* Steel skids with bed of rollers helps shift old battery out of truck, new one into position.

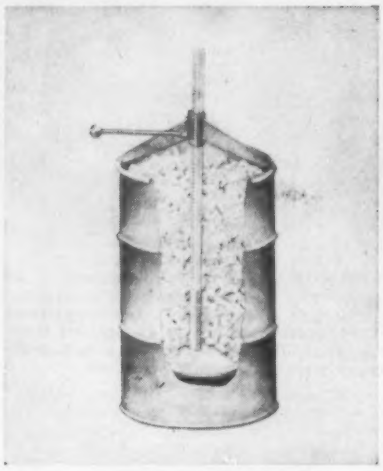
REEL AND STAND—*Palmer-Shile Co, 16019 Fullerton, Detroit 27, Mich.* For steel coil handling; feeds coil directly. Built to any capacity.

WORK POSITIONER—*Special Products Div, Rodney Hunt Machine Co, Dept B, Orange, Mass.* For bench-level presentation of sheet stock; can handle loads to 5000 lb. Standard lifting speed is 28 ipm with max lift distance of 36 in.

DIE HANDLER—*Hansford Mfg Corp, 1239 University Ave, Rochester 7, NY.* Model 1016 handles 18x24-in. dies, is portable. Hand crank permits revolving 360°.

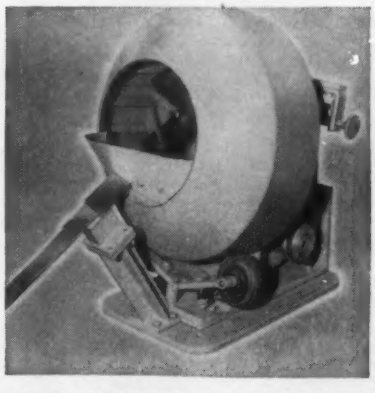


LOADER—*Industrial Heating Equipment Co, 3570 Fremont Pl, Detroit 7, Mich.* Small parts metered 100 to 5000 lb per hour through variable speed drive having a 20:1 variation.

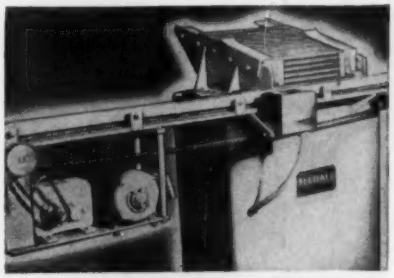


SMALL PARTS HANDLER — *Actron Engineering Co, 1193½ Lorain Ave, Cleveland 11, Ohio.* Fits in storage drums to allow operator to gradually raise height of parts as drum is emptied.

BOWL FEEDER — *Detroit Power Screwdriver Co, 2801 West Port St, Detroit 16, Mich.* Vibrating; designed to provide fully automatic, oriented, single-line feeding to grinding, packaging, inspecting, and other automatic machines and operations.



PARTS FEEDER—*Feedall Machine & Engineering Co, 38399 Pelton Rd, Willoughby, Ohio.* Model 400; 24-in.-dia; powered with ¼-hp motor. Adaptable to assembly presses, counterless grinders, secondary-operation machines.



AUTOMATIC MAGAZINE LOADER—*Feedall Machine and Engineering Co, 38399 Pelton Rd, Willoughby, Ohio.* Feeds long cylindrical work to centerless grinders, special polishing, or inspection machines. Parts are cycled by means of photoelectric relay mounted on conveyor attached to front of machine. Feeding rate is controlled by variable speed drive.

SMALL PARTS HOPPERS — *Wm Doepke Mfg Co, NesTier Div, 8813 Blue Ash Road, Rossmoyne, Ohio.* Rack and lid combination, Hopper Rack, converts standard NesTier materials handling boxes. Can be bench- or wall-mounted.

PNEUMATIC VIBRATOR—*Vibron Division, Burgess-Stergentz Corp, 3790 West 150th St, Cleveland 11, Ohio.* Make inert bulk materials flow freely without jarring noise produced by impacting type. Cycle is automatic and produces 5000 vibrations per minute.

FLOOR-MODEL UNLOADER—*Sahlin Engineering Co, Birmingham, Mich.* For automatic unloading of small and medium-size parts from presses and other metalworking machines. Unit can be supplied with either fixed or roll-away base.

GRAVITY-FED HOPPER—*The Union Metal & Mfg Co, Canton, Ohio.* Volume of 34.8 cu ft. Flow of material is regulated by adjustable control gate.

AUTOMATIC LOADERS—*Hautau Engineering Co, 721 Wanda, Ferndale 20, Mich.* 120° index table with offset-flanged drive motor and index mechanism which permits mounting of die punch at optimum dead-center ram position.

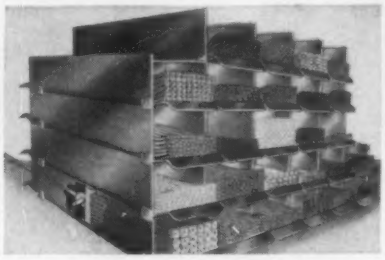
STOCKTAINERS—*Rack Engineering Co, Connellsville, Pa.* Drop sides; heavy-duty cast malleable legs and built-up mounts. Locking device holds sides without danger of accidental release.

PLANT SERVICE EQUIPMENT—misc materials handling

ALL-PURPOSE DOLLY — *Browning Laboratories, Inc, Winchester, Mass.* Basic dolly consists of steel shelves 24x24 in. rigidly mounted in framework of chromic plated tubular steel. Four-in. casters, two with brakes, provide mobility.

COLLAPSIBLE STACKING RACK — *American Metal Products Co, 5959 Linsdale Ave, Detroit 4, Mich.* Ends fold inside frame when empty, or lock in vertical position when swung up. Units can carry loads of 3000 to 5000 lb, and be stacked to six tiers high.

STEEL TRUCKS—*Kennett Equipt & Machinery Co, Kennett Square, Pa.* Round-cornered steel bin-type trucks have rolled edges, angle base frame, channel caster supports, roller bearing casters, and 18-ga CRS bodies. Supplied knocked down in five std sizes.



WIRE RACKS—*Stackbin Corp, 1139 Main St, Pawtucket, RI.* Individual units are 2½x2x15 in.; arranged at work station they can be loaded from the rear. Raised lip on each end positions wire for speedy selection.

TOTEBOX—*U S Plywood Corp, 55 West 44th St, New York 36, NY.* Container, constructed entirely of aluminum and veneer, weighs 29 lb is 21 in. high, 25½ in. long, 18½ in. wide.

CART — *Laboratory Construction Co, 1115 Holmes St, Kansas City, Mo.* Utility cart to speed work of handling and assembling small parts is made of 1-in. seamless steel tubing. Unit carries four plastic tool boxes.

TOTE TUBS—*Stephenson Industries, 548 E Fort St, Detroit 26.* 2, 4, 6 and 8 cu ft, for stacking, can be handled when loaded with either lift fork truck or overhead hoist; capacities from 750 to 1500 lb.

STACKING BOXES — *Palmer-Shile Co, 16019 Fullerton, Detroit 27.* Nesting, inside top dimensions 45 in. long, 36 in. wide; depth, 23 in., weight 190 lb with 4000-lb capacity.

STACKING RACK—*Leebaw Mfg Co, 67 Wayne Ave, Youngstown 2, Ohio.* To accommodate specified pilot sizes; built with flanged legs so each unit will have complete rigidity when resting on one below.

STACKING PALLET — *Equipment Mfg, 21550 Hoover Rd, Detroit 5.* Lightweight unit handles cylindrical shapes that stand on end. Access is provided for lift-truck handling from four sides.

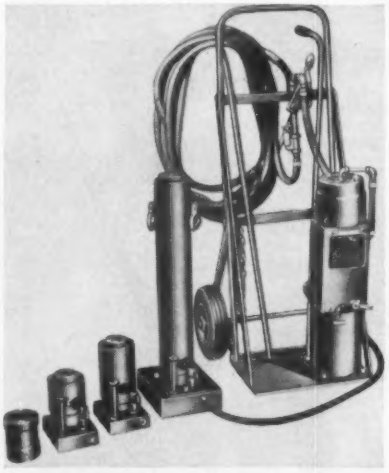
TOTE-BOX—*Charles William Doepke Mfg Co, Rossmoyne, Ohio.* Dimensions of 12 x 7¼ x 4¾ in. Capacity is 200 lb with standard handles, 400 lb with heavy-duty handles.

DOLLY UNITS — *Western Mfg Co, Arkansas City, Kan.* For use with Western sheet handlers consists of two handlers mounted back to back, braced on steel platform, with either stationary or swivel casters. Two units are tied together with 2-in. pipe which can vary from 4 to 12-ft long, depending upon length required.

STACKBINS — *Stackbin Corp, 1139 Main St, Pawtucket, RI.* Permanent or removable dividers provide up to double the number of openings for all standard sizes.

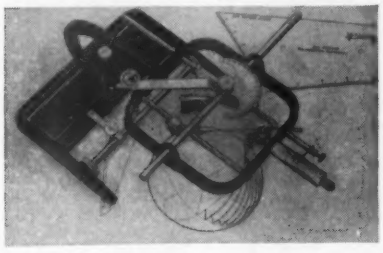
TOTE BOXES—*William Bal Corp, 2A Johnson St, Newark 5, NJ.* Four steel lugs are riveted to tapered, vulcanized fiber sides.

SPECIAL SHOP EQUIPMENT — *Industrial Bench & Equipment Mfg Co, 98 South St, New Britain, Conn.* All curves and angles are made to blueprint specification.



AIR HYDRAULIC JACK — *Duff-Norton Manufacturing Co, Pittsburgh, Pa.* Uses 80 to 100-lb compressed air supply to operate separate hydraulic pump. Combination jack and ram allows choice of four hydraulic rams: 4½, 7½, 10 and 28 in. in length, to move 30 tons a distance of 2, 3½, 6 and 20 in.

COPYING UNIT—*Charles Bruning Co, 4700 Montrose Ave, Chicago 41, Ill.* Prints to 11 in. by any length are handled at 14 fpm by Model 100, a diazo-direct copying unit.



CIRCULAR DRAWING MACHINE—*Charles Bruning Co, Chicago 41, Ill.* To make accurate pictorial drawings in less time than it takes to make plan view drawings. Two simple settings, one to establish major diameter, the other the minor diameter.

TRACING TEMPLET—*Northwestern Tool & Engineering Co, 117 Hollier Ave, Dayton 3, Ohio.* Single templet sheet covers 263 full-scale standard tools taken from catalogs. Templet is 25x8½ in.

PRINTING MACHINE—*The C F Pease Co, 3991 N Rockwell St, Chicago 18.* One-step feed, synchronized to 40 fpm, with finished whiteprint delivered in 6½ seconds.

TEMPLET—*Dri-Flo, 642 E 10-Mile Rd, Hazel Park, Mich.* Plastic disk for use with pencil or scriber point. Series of parallel lines.

PORTABLE DRAWING BOARD—*The Graphostat Co, 110 Eaton Place, East Orange, NJ.* Molded of clear polystyrene plastic; weighs less than 8 oz. Two metal straight edges, one horizontal, one vertical.

COPYING MACHINES—*Ozalid Div, General Aniline & Film Corp, Johnson City, NY.* Model 800 and the Bambino. 800 includes new blower system, separating device, and developer system. Printing speed is 300 fpm. The Bambino occupies less space than an electric typewriter.

PLASTIC TEMPLETS—*Hermes Engravers, Inc, 18 University Place, New York 3, NY.* Made according to specifications from original blueprints cut in 0.30 Plexiglas with a 15° bevel for tracing pencil.

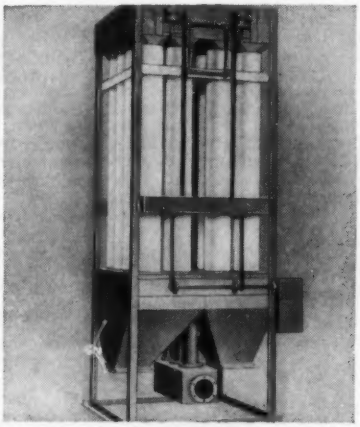
PHOTOCOPY MACHINE—*American Photocopy Equipment Co, 1920 W Peterson Ave, Chicago 26.* Apeco "Private Eye" Auto-Stat, portable, plugs into any electrical outlet.

PERSPECTIVE GRAPHS—*Tech-Art Graphs, 315 South 15 St, Philadelphia 2, Pa.* For scaling engineering drawings into perspective views; 20 x 33-in. size.

DIGITAL COMPUTER—*Consolidated Engineering Corp, 300 N Sierra Madre Villa, Pasadena, Calif.* Additions, subtractions, logical shifts, and transfers performed at 500 per sec; multiplications at 120 per sec, and divisions at 85 per sec.

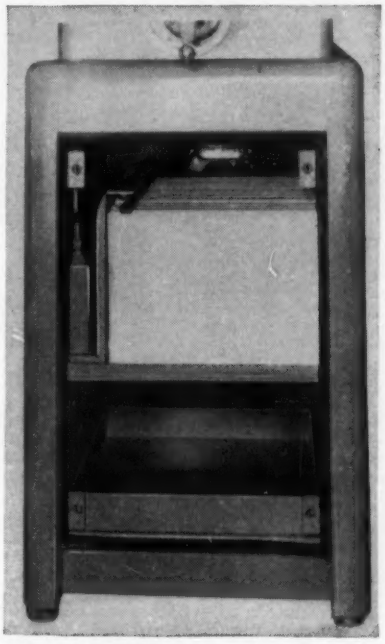
SLIDE RULE—*Pickett & Eckel, 1109 S Fremont St, Alhambra, Calif.* 903-T single-setting conversion model has 64 linear, liquid, energy, and miscellaneous factors on one side, plus complete trig scale arrangement on reverse.

CONTACT PAPER—*Eastman Kodak Co, Rochester 4, NY.* Kodagraph Translucent gives faster print-back speeds when diazo or blueprint reproductions are made.



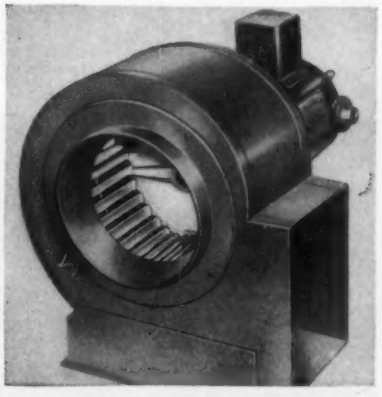
DUST COLLECTOR—*American Filter Co, Inc, Louisville, Ky.* Amerjet reverse jet fabric unit for applications where extremely fine particles are involved or material must be collected in dry state for reclaiming.

VAPOR COLLECTOR—*Aget-Detroit Co, Ann Arbor, Mich.* Model VCM-2 incorporates paddle wheel fans which provide increase in total cfm capacity. Motor rating is ¾ hp; baffles in front of each outlet connection intercept direct throw of sludge.



DUST COLLECTOR—*Boyar-Schultz Corp, 2110 Walnut St, Chicago 12, Ill.* Used in conjunction with Boyar-Schultz 6-12 surface grinder and serves as grinder's stand. Unit, however, can be used with any type of equipment.

DUST COLLECTOR—*Dust Suppression & Engineering Co, PO Box 67, Lake Orion, Michigan.* Wet-type dust collector dispenses with usual water curtain and sprays, water eliminators, pumps, and rotary elements.



BLOWER—*Standard Electric Mfg Co, Inc, West Berlin 12, NJ.* 6-in. wheel; moves 600 cfm; automatic cutout stops motor before it can overload.

PORTABLE DUST BIN—*Torit Mfg Co, 280 Walnut St, St Paul 2, Minn.* Optional equipment for Model 219 Twin Cyclone dust separator. Use requires separator be mounted on legs and equipped with hopper bottom.

DUST COLLECTORS—*Rorit Mfg Co, 280 Walnut St, Paul 2, Minn.* Series 602A three-cabinet collectors with 7-cu-ft drawers. Air capacities range from 300 to 11 cfm.

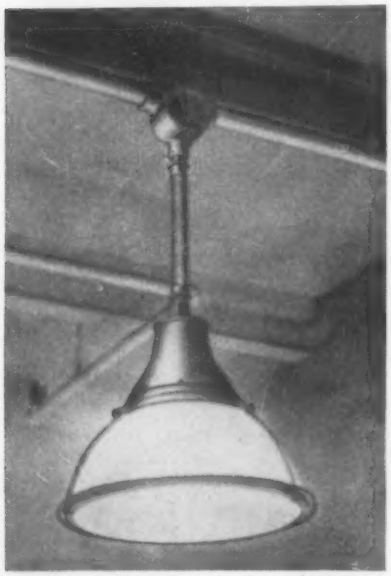
EMERGENCY LIGHTING—*Hobby & Brown Electronic Corp, Rockville Centre, NY.* Equipment provides 10,000 candle-power; case contains 100-amp storage battery.

LIGHTING UNITS—*Swivelier Co, Inc, Dept DLP, 43—34 St, Brooklyn 32, NY.* Line includes 17 universally adjustable incandescent and fluorescent lighting units. Four models incorporate an incandescent hood which remains comfortable to touch. Dextra-Lites incorporate the TTC (turn tension control).

LAMP REFLECTORS—*Abolite Lighting Div, Jones Metal Products Co, West Lafayette, Ohio.* All-white titanium porcelain enamel finish. Ventilator slots provide for air.

LIGHTING — *The Fostoria Pressed Steel Corp, Fostoria, Ohio.* Localite line for lighting machine tools, assembly benches, and inspection uses, has arm joints of tension-disk design to provide easy adjustability with one hand. Reflectors rotate 360°.

LAMP — *General Electric Co, Nela Park, Cleveland 12.* Fluorescent, said to produce 35% more light than any previous similar source; standard cool white model, 8 ft long, 1½-in. dia; rated life is 7500 burning hours.



LIGHTING FIXTURE—*Crouse-Hinds Co, North St, Syracuse, NY.* EV Series, explosion-proof, for use in locations where flammable gases may be present.

FLOODLIGHT—*General Electric Co, Lighting & Rectifier Dept, Schenectady 5, NY.* Aluminum L-66, with 360° vertical or horizontal rotation has 200-w general service lamp with 946-cp beam.

PATCHING COMPOUND—*Sun Chemical Corp, Long Island City, NY.* Kwik-Roc restores holes and cracks in interior concrete floors.

FLOOR PADS — *Bakelite Co, Div, Union Carbide & Carbon Co, 260 Madison Ave, New York 16, NY.* Re-usable pads support pressures to 4000 psi and are said to resist oils, greases, and alkalis.

FLOOR MACHINE—*Hild Floor Machine Co, 740 W Washington Blvd, Chicago 6, Ill.* Model K is now equipped with an automatic safety switch. Momentary contact turns on current when switch lever is pressed against handle grip.

SANDWICH-DESIGN PANELS — *Reynolds Metals Co, 2500 S Third St, Louisville, Ky.* Uses range from desktops to catwalks. They consist of two outer sheets of embossed aluminum bonded with heat and pressure to core of resin-impregnated paper formed into figure-eight honey-comb construction. Material, called Reynocell, is in sizes to 57 in. by 16 ft.

TIRES—*Parker Sweeper Co, 100 Bechtle Ave, Springfield, Ohio.* Tank-tread rubber, for all Parker industrial floor sweepers. Highly resistant to chewing-away effect of metal chips and shavings, and deterioration by grease and oil.

CEMENT—*Atlas Mineral Products Co, Mertztown, Pa.* Vitroplast acid-solvent-grease-detergent-resistant cement for joining brick or tile. Available in white, black, or colors.

PUSH BROOM—*FullerBrush Co, Industrial Div, Hartford 2, Conn.* Blade Sweep has optional metal scraper; four-position brush, widths 18-36 in.

FLOOR PAINT—*Colonial Refining & Chemical Co, NBC Bldg, Cleveland 14, Ohio.* Sure-Grip is a plastic liquid containing grit of near-diamond hardness. Product is much thicker than conventional floor paint; rough surface prevents falls even when wet.

GRATING—*Bustin Firm-Grip Grating Corp, Dover, NJ.* Type B has ½ of a diamond opening 13/16 in. between bearing bars. Close dimensions combine safety with comfortable walking.

STEEL-CLAD FLOORS — *Flash-Stone Co, Inc, 3723 Pulaski Ave, Philadelphia 40, Pa.* Heavy-gage rolled steel plates provide hard abrasion-resistant surface. Installed over sound wood floors, new or old concrete.

INDUSTRIAL FLOORING — *Flash-Stone Co, Inc, 3723 Pulaski Ave, Philadelphia 44, Pa.* Metal-Seeded Dynapakt. An 8-in. veneer of iron-chip aggregate is installed as non-slip armor over fresh concrete topping.

FLOORING MATERIAL — *Stonhard Co, 601 Stonhard Bldg, 1306 Spring St, Philadelphia 23.* Ston-cap, supplied in ¼-in. depth, smooths out worn, rutted surfaces; wood, concrete, or composition.

METAL GRID—*Bufnel Co, Ltd, Box 187, Hollydale (Los Angeles) Calif.* Steel-Grid can be embedded in old or new floors, concrete, mastic, asphalt, or any hard-setting plastic material.

ROOFING MATERIAL—*Aluminum Co of America, 805 Alcoa Building, Pittsburgh 19.* Lightweight corrugated aluminum sheet made of same high-strength alloy as standard 0.032-in. product. Can be used for both new construction and re-roofing jobs.

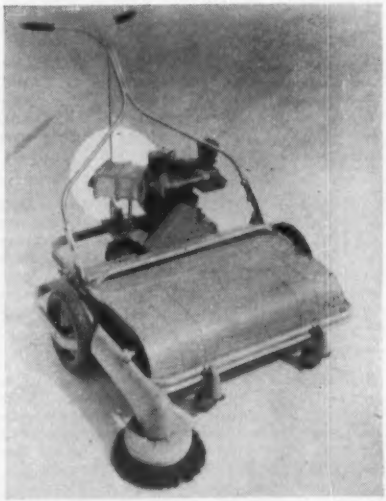
MAGNETIC SWEEPER — *Magnetic Engineering & Mfg Co, Clifton, NJ.* Is permanently energized and needs no electric current.

FLOOR SWEEPER—*Parker Sweeper Co, 100 Bechtle Ave, Springfield, Ohio.* Turbo-Sweep sucks dust from air at rate of 300 cfm; fiber brushes collect debris in hopper.

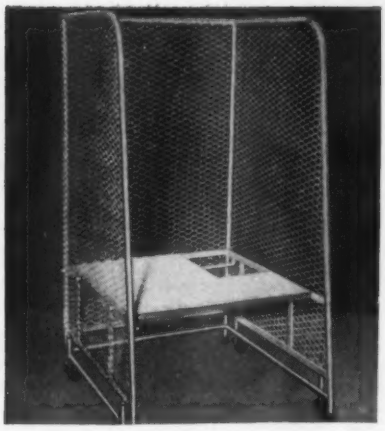
FLOORING COMPOUND — *The Monroe Co, Inc, 10703 Quebec Ave, Cleveland 6, Ohio.* Improved to withstand loads to 20 tons. Can be used to resurface any concrete, indoors or out. Process produces smooth finish in light gray.

SURFACING—*The Monroe Co, 10703 Quebec Ave, Cleveland 6.* X-L Veneer non-slip, non-skid safety topping for steps and floors. Can be used over concrete, wood, steel ,tile, mastic, or terrazzo floors; said to be impervious to oil or grease.

FLOOR COATING—*Corrosion Engineering Products Dept, Pennsylvania Salt Mfg Co, Philadelphia 7.* Neofloor skidproof surfacing for concrete, wood, and metal floors where oils, greases, and chemicals are present.



MOTORIZED SWEEPER — *Parker Sweeper Co, Springfield, Ohio.* Equipped with catalytic exhaust attachment; box-like contrivance is located where the muffler usually is found. Price, $150.



PORTABLE CAGE — *The Ballymore Co, Wayne, Pa.* Operator protection on paper-shearing machine incorporates foot pedal actuating shear and coming through expanded steel floor of cage.

VAPOR RESPIRATOR—*Chicago Eye Shield Co, 2300 Warren Blvd, Chicago 12.* Cesco No. 99 can be fitted with auxiliary cellulose filters to prevent clogging of cartridges during paint spraying operations.

DUAL-PURPOSE RESPIRATOR — *Chicago Eye Shield Co, 2300 Warren Blvd, Chicago 12, Ill.* Twin cartridges for organic vapors or filters for dust, has face-piece of soft rubber to provide leak-proof fit with light tension on two adjustable headbands.

PROTECTIVE CREAM — *Ayerst Laboratories, Inc, 22 E 40th St, New York 16.* Kerodex barrier cream is said to protect against contact dermatitis due to primary irritants as well as against sensitizing agents encountered on the job.

POURING SPOUT—*General Scientific Equipment Co, c/o John P Eldridge, 1412 Packard Building, Philadelphia 2, Penna.* Acid-resistant rubber and plastic tubing, designed to avoid splashing and fumes.

FOOT-BATH TRAY—*General Scientific Equipment Co, 2700 W Huntington St, Philadelphia 32.* Non-slip waffle tread; made of tough rubber, reportedly will resist inroad of antiseptic solutions. Measures 19 in. in dia by 3½ in. high.

GUARD—*Mine Safety Appliances Co, 201 N Braddock Ave, Pittsburgh 8.* MSA Faceguard has molded headgear cap of glass fiber-reinforced cellulose construction. Visors are 12 in. wide for protection against side impact or splashes.

WARNING SYSTEM—*Eriez Manufacturing Co, Dept MC 3, Erie, Pa.* Insures against product contamination, machinery damage, and fire and explosion, by automatically removing the cause—tramp iron and ferrous particles in the production line. A sensitive ferrometer constantly measures the quantity of tramp iron as it accumulates on the magnet's surface.

SAFETY EQUIPMENT—*Chicago Eye Shield Co, 2300 W Warren Blvd, Chicago 12.* CESCO items, consisting of a head gear, hard hat, welding hat, welding helmet, plastic shield, and screen shield.

EYE SHIELDS—*Watchemoket Optical Co, 232 W Exchange St, Providence, RI.* Eye Savers "Clip-On" side shields add deep cup side protection to safety spectacles of any size. Clear or green acetate.

SURFACING — *Minnesota Mining & Manufacturing Co, 900 Fauquier St, St Paul 6, Minn.* Safety-Walk, with mineral coating of traprock for pulley lagging. Can be spiral-wound or applied in sections.

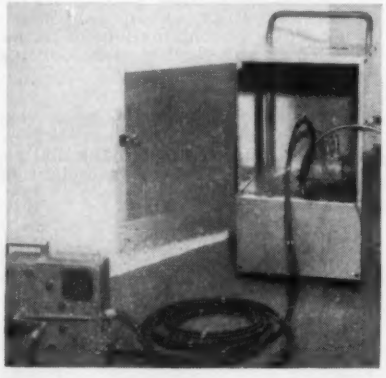
SKIN-PROTECTOR — *Hygiene Research Inc, 684 Broadway, New York, NY.* Ointments avoid effects of exposure to industrial irritants.

ALARM DEVICE—*R G Genzlinger, Inc, Dept. MW-2, Neshaminy, Pa.* To start and stop electrically driven mechanical devices and machines, sound alarms. Operated by person coming close to but not touching, the unit.

DISPENSER—*West Disinfecting Co, 42-16 West St, Long Island City 1, NY.* For antiseptic protective creams, accommodates 12-oz tubes. Predetermined amount dispensed with each stroke.

WELDING HELMET—*General Electric Co, Welding Dept, Schenectady 5, NY.* Seamless plastic model incorporates G-E standard ventilation design for cooler welding and prevention of lens fogging.

DUST HOOD — *General Scientific Equipment Co, 2700 W Huntington St, Philadelphia 32, Pa.* Dust hood to protect eyes, head, face, and neck from irritating dust. The 5-oz protector is made of lightweight cloth with large picture window.



EXPOSURE SHIELD—*Technical Operations Inc, 6 Schouler Court, Arlington, Mass.* For Cobalt 60 radiography. Two models: 202 for 2000 millicuries of Cobalt 60, and 402 for handling 4000 millicuries.

LINE MARKER—*M-B Corp, New Holstein, Wis.* Model 1-10 safety-line marker has 10-gal paint tank, marks 2½- to 5-in. lines, up to 8,000 ft per hr of 4-in. line. Hand-propelled unit has 1-hp engine for spray.

ANNUNCIATORS — *Panalarm Products, Inc, 6312 N Broadway, Chicago 40, Ill.* Sequence-indicating; pinpoint cause of trouble by showing first variable to go "off-normal."

HAND CREAM—*Chase Chemical Co, 1374 E 170th St, Cleveland 10, Ohio.* Donovo contains 15% hydrous lanolin, menthol, in hydrophilic cream base.

GOGGLES—*Chicago Eye Shield Co, 2300 W Warren Blvd, Chicago 12.* Lightweight plastic with ultra-violet ray inhibitor to overcome fogging, crazing, and brittleness.

SPECTACLES—*US Safety Service Co, Kansas City 6, Mo.* All-Plastic Saf-I-Spectacle frame permits instant change from regular to side shield model.

WELDING GOGGLE — *Watchemoket Optical Co, 232 W Exchange St, Providence, RI.* Model 492 SV incorporates Stac-Vent principle of ventilation to prevent fogging.

CAP ATTACHMENT — *Davis Safety Div, Davis Emergency Equipment Co, 45 Halleck St, Newark 4, NJ.* "Speedy Attachment" for connecting shields and helmets to caps of any size or shape eliminates need for special tools or fittings on cap.

SAFETY GOGGLES — *Watchemoket Optical Co, Inc, 232 W Exchange St, Providence, RI.* Provide protection on top and sides, as well as from front of the workers' eyes.

GLOVES—*Safety Clothing & Equipment Co, 1990 E 69th St, Cleveland, Ohio.* Tanned with process which renders them green. Material is split cowhide.

GLOVES—*Jomac, Inc, 6128 North Woodstock St, Philadelphia 38, Pa.* Jomac cloth is a twisted loop pile fabric. Also available with plastic coating Armorkote.

WORK GLOVES—*Fairfield Glove Co, Fairfield, Iowa.* Safety slogans are printed to customers' specifications.

PLANT SERVICE EQUIPMENT—safety, fire protection, misc

SAFETY GLOVE—*Wolverine Shoe & Tanning Corp, Rockford, Mich.* Free Touch Armortip; has tempered carbon steel cap cemented into tips of three fingers on each hand.

GLOVE FINISH—*Surety Rubber Co, Carrollton, Ohio.* Griptite finish provided on non-allergic Neoprene industrial gloves provides a permanent rough-finished glove that can be used safely in handling the most delicate materials.

FIRE TRUCK — *Kalamazoo Mfg Co, Kalamazoo, Mich.* Mobile in-plant Fire Fighter, a one- or two-man truck, speed of 15 mph, equipped to carry complete high-pressure fog systems, 210 gal. of water, 100 ft of booster hose.

FIRE EXTINGUISHER—*Pyrene Mfg Co, 560 Belmont Ave, Newark 8, NJ.* Stored-air-pressure, vaporizing-liquid unit has combination carrying handle and squeeze-type operating valve.

FIRE EXTINGUISHER — *Stop-Fire, Inc, 125 Ashland Place, Brooklyn 1, NY.* Valve is said to give trouble-free operation, even when extinguisher is partially charged and out of operation for some time.

WALL-BRACKET—*Mel-Rod Manufacturing Co, 11616 Hart St, North Hollywood, Calif.* For CO_2 fire extinguishers; has built-in indicator to tell whether extinguisher is full or empty.

FIRE-RESISTANT MATERIAL — *Tectum Corp, Newark, Ohio.* Tectum is composed of a uniform layer of wood fibers impregnated with an inorganic binder. The roof decks, which weigh two pounds per square foot per inch of thickness, will carry roof loads of 200 lb per sq ft.

FIRE-PROTECTIVE COATING—*Benjamin Foster Co, 4635 W Girard Ave, Philadelphia 31, Pa.* Mastic 80 has been listed by Underwriter's Lab after tests involving the application of a ⅛-in. coating over steel and asbestos cement board. It is an anti-corrodent, vapor-barrier, and weather-protective coating.

HEAT-PROTECTIVE CLOTHING — *Fyrepel Products, Inc, Newark, Ohio.* Insulated with Fiberglas. Moisture-resisting outer coating protects against scalding.

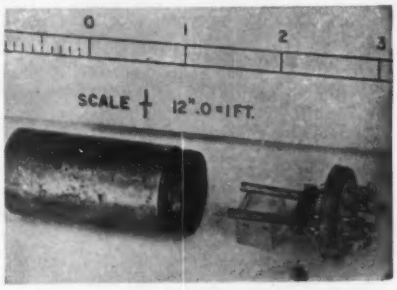
SAFETY PACKAGE—*E F Houghton & Co, 303 W Lehigh Ave, Philadelphia 33, Pa.* Group of processing products for use in vicinity of fire and intense heat.

TOWEL — *Leshner Corp, Hamilton, Ohio.* Flameproof, all cotton, disposable towel has been developed to replace cloth wipers.

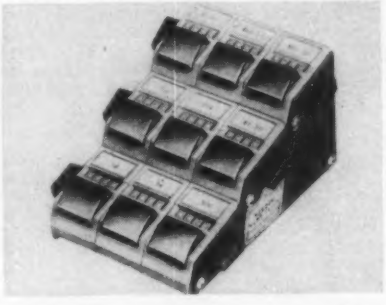
BLANKET—*Industrial Products Co, 2844 N Fourth St, Philadelphia 33.* In quick-release wall canister for use in event of injury or burning clothing. All-metal container is 8½ in. in dia by 20 in. high.

RESPIRATOR—*Mine Safety Appliances Co, Braddock, Thomas & Meade Sts, Pittsburgh 8.* MSA Comfo protects wearer against toxic dust and organic vapors. Static-web dust-filters clamp on respirator's twin chemical cartridge filters.

FOG GUN — *Bete Fog Nozzle Inc, Greenfield, Mass.* Adjustable from soft conical fog to hard driving jet. Pressures from 30 to 150 psi; price, $9.95.

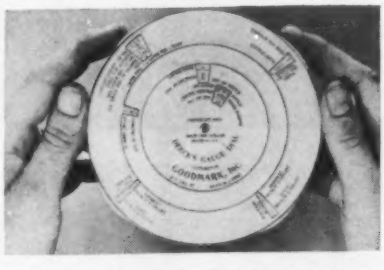


ANALOG COMPUTER COMPONENT —*Arma Corporation, Garden City, NY.* Capable of performing addition, subtraction, multiplication, division, integration, and basic operations of vector calculus. Component operates on the basis of heat transfer; an incoming electrical signal is dissipated into heat by a transducer.



COUNTER—*Veeder-Root, Inc, Hartford 2, Conn.* 66 combinations of banks, up to 6 high and 12 wide, each counting to 9999, reset by knob to 0.

STAMPING CALCULATOR — *Bao Slide Co, Chicago 80.* Vinyl 4x10-in. calculator indicates shell-blank dia, no. of draws, bend allowances, weight of metal, etc.



GAGE DIAL CALCULATOR—*Goodmark, Inc, 21 E 2nd St, Dayton 1, Ohio.* Has 13 tables for quick, accurate provision of sizes of lettered drills in decimals, division of circles giving chords and including angles of division. Dial is 5 in. dia; ⅛ in. thick, made of pressboard.

CIRCULAR SLIDE RULE—*Allegheny Plastics, Inc, 2 Thorn Run Rd, Coraopolis, Pa.* 8-in. dia; laminated plastic; equivalent to straight rule over 20 in.

TOOL CHEST—*Huot Mfg Co, 530 N Wheeler St, St Paul 4, Minn.* Model 400 Tuldex for vertical storage has six 12x18-in. tool-holding panels and two doors.

DRILL DISPENSER—*Hayden Twist Drill Co, 7626 Lyndon, Detroit 38.* Holds all popular sizes of fraction drills compactly arranged together. Drill gage plate furnished as part of each unit.

TOOL STAND—*Standard Pressed Steel Co, Jenkintown, Pa.* Model 426 is heavy-gage steel, mounted on 2½-in. swivel casters, with cabinet and two drawers. Top is recessed tray.

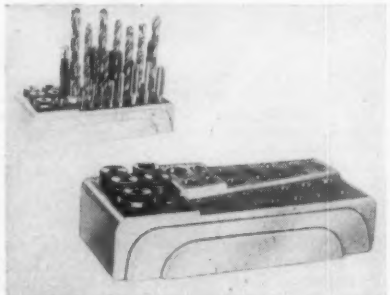
TOOLBOX — *Huot Manufacturing Co, 530 N Wheeler St, St Paul 4, Minn.* Portable, seven-drawer; top compartment for large tools, has cork linings to protect tools and absorb moisture.

TOOL BOARD—*Scully-Jones & Company, 1901 S Rockwell St, Chicago 8, Ill.* Improved system for replacing tools on large transfer and other multi-spindle machines. Complete set of new tools is kept in place, ready to be used.

TOOL DRESSING PACKAGE—*Lobdell United Co, Wilmington 99, Del.* Includes Nazel electropneumatic forging hammer, a Lobdell product, heating equipment by Eclipse Fuel Engineering Co, tool-grinding equipment by Black & Decker Co, and accessory tools and tool steels by Bedford Tool & Forge Co.

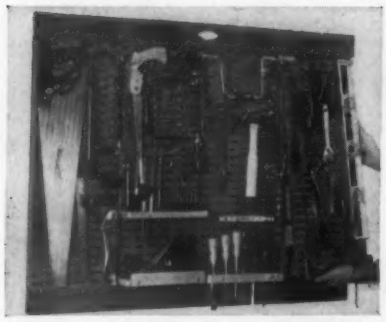
STEEL CHEST—*KSM Products, Inc, Merchantville, NJ.* For stud-welding equipment; heavy-gage steel with welded construction throughout.

TAP BOXES—*Threadwell Tap & Die Co, Greenfield, Mass.* Plastic units for complete line from No. 0 through ½ in. Three sizes ,each accommodating 12 taps in individual recesses.



DRILL & TAP STAND—*M-M-A, Inc, Lancaster, Pa.* 3-I-Q unit provides indexed place for 15 popular sizes; furnished with 9 precision-made tap guides and self-tension tap guide body to assure proper alignment and tap starting. Stand is 3½x7½x2 in., weighs 2 lb.

STAGES—*R D Werner Co, 295 Fifth Ave, New York 16.* For painting or maintenance work; all-aluminum 30-ft model will support 500-lb weight. Decking is skid-proof.



UTILITY RACK—*Sturdi-Bilt Steel Products, 624 S Michigan Ave, Chicago 5.* All steel, can be mounted individually or continuously; has removable, interchangable panels, each 11 in. wide supplied with slotted toolholder shelves.

CABINET—*General Industrial Co, 5738 Elston Ave, Chicago 30.* Portable "See-Thru" small parts drawer cabinet can carry a 100-lb load. Model JC-32-SD has 24 plastic drawers; dividers provide 72 adjustable compartments.

STOOLS—*Pollard Brothers Mfg Co, Chicago.* Steel-frame adjustable factory stools and chairs, are available at stationary model prices. Combination of riveting and welding said to produce non-twist and double-strength characteristics.

BENCH—*Sturdi-Bilt Steel Products, 2501 W Peterson Ave, Chicago 45.* Shop Tender; optional equipment includes a 24x24-in. bonded wood top with drop sides; drawer; wheel set, or casters.

BENCH TOP—*Rock Island Millwork Co, Dept C-5, Rock Island, Ill.* CrafTop and ShopTop laminated core blocks and Resinwood is in 1½, 1¾, 2, and 2¼-in. thicknesses. Widths, 24, 32, 36, 48 in. Length, 24-96 in.

BENCH TOPS—*Sturdi-Bilt Steel Products, 624 S Michigan Ave, Chicago 5.* Plastic-impregnated woodwork, in 26 sizes. Specially developed finish is said to make them oil and grease-resistant, warp-proof, splinter and dent-proof.

STEEL STANDS—*Collins Microflat Co, 2326 E 8th St, Los Angeles 21, Calif.* For black granite surface plates; sizes from 12x18 in. through 72x144 in. Overall working height, 36 in.

ALL-METAL CABINET — *Perkins Products, Inc, 170 E Market St, Alliance, Ohio.* 32 and 16-drawer model; dividers are provided to separate rust-proof aluminum drawers into three compartments.

ALUMINUM STEP-STANDS—*Scaffold Equipment Co, Railroad St, Murrysville, Pa.* Completely welded unit fabricated from high alloy aluminum tubing and expanded metal. Line ranges from 1 to 12 steps, with a 10-in. top platform.

MAGNETIC LATCH — *Laboratory Equipment Corp, St Joseph, Mich.* For cupboard or cabinet doors; has no moving parts or springs.

SWING-BIN CABINETS — *Akro-Mils, Inc, 820 E Market St, Akron 9, Ohio.* For small parts; have six drawers, each 2½ in. wide by 1 1/16 in. deep by 9½ in. long, which swing from a sturdy bracket.

ROTARY STANDS—*Union Metal Mfg Co, Canton, Ohio.* For protection of small parts against corrosion in storage. Three typical stands store parts in individual glass jars within a space 3 ft sq and 1 ft deep.

SAFETY-STEP LADDERS — *The Ballymore Co, Wayne, Pa.* Equipped with rubber feet on all legs; flared formation increases floor contact area by 400%. Rubber grip engages floor when user steps on ladder. Ladders are available in 115 standard types, up to twelve steps, with a choice of three safety treads.

INDUSTRIAL BENCH — *Industrial Bench & Equipment Mfg Co, 98 South St, New Britain, Conn.* Pressed wood top; for shops doing precision work requiring a semi-soft top mounted on a solid, rigid construction. Made of ⅛-in. Masonite, it is cemented to the steel top.

RETRACTABLE CASTER SETS — *Delta Power Tool Div, Rockwell Manufacturing Co, 431 N Lexington Ave, Pittsburgh 8.* Fit all types of Delta industrial metal and wood-working power tools normally mounted on steel stands; making each portable.

METAL PLAN FILE — *Mayline Co, Sheboygan, Wis.* 5-drawer units are made in popular sizes in relation to inside space and outside dimensions. Drawers operate on ball bearing rollers.

TRAFFIC LIGHTS—*Standard Pressed Steel Co, Jenkintown, Pa.* System flashes warning whenever an overhead crane approaches heavily traveled cross-aisles.

SOUND PROTECTORS—*David Clark Co, Dept G-1, Worcester, Mass.* Muff-type, protect against high and low-frequency injurious noise.

SOUND UNITS—*Sonosorber Corp, 21 South 16th St, East Orange, NJ.* 24 in. long; hung on 2, 4, 6, or 8-ft centers as desired. Inner cores encased in perforated-stucco embossed aluminum. Suited for noisy locations.

EAR INSERTS—*Sigma Engineering Co, 1491 N Vine St, Los Angeles 28.* Silicon rubber replacements for the Lee Sonic Ear-Valv. Improvement over original gum rubber inserts.

DEHUMIDIFIER—*VanGuarD, 57 E 73rd St, New York 21.* Dampp-Chaser electric closet dryer operates on std ac-dc current, needs no attention.

VINYL PLASTIC TAPES—*Van Cleef Div, Johns-Manville Corp, 7800 Woodlawn Ave, Chicago 19, Ill.* UL approved; eight colors; four widths, from ⅜ to 1 in.

ROOF COATING—*Colonial Refining & Chemical Co, NBC Bldg, Cleveland 14.* 3R aluminum asbestos tested in a one-coat brush-application dropped roof temp 24 deg in ten minutes.

STRIPPING TAPE—*Permacel Tape Corp, New Brunswick, NJ.* Hi-Tack 16 in colors. Water and shock resistant.

ALUMINUM PAINT—*Aluminum Co of America, 721 Alcoa Bldg, Pittsburgh 19, Pa.* Opal-Glo is opalescent finish available in seven colors. Said to achieve unusual depths and tones of color, without metallic sheen.

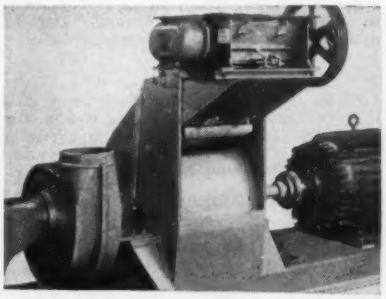
SIGN—*W H Brady Co, 727 W Glendale Ave, Milwaukee 12, Wis.* Pressure-sensitive sign, reading "TURN OFF LIGHTS," can be applied to light switch cover plates or pull cords.

STRIPED ADHESIVE TAPE—*Westline Products Div, Western Lithograph Co, 600 E Second St, Los Angeles 54, Calif.* Yellow and black striped "Hazard-stripe" comes in 2-in.-wide rolls, with 1 1½-in.-wide tape, in choice of three materials.

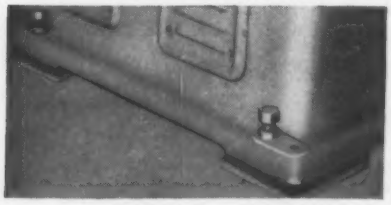
MAINTENANCE COATING — *Magic Chemical Co, Dept N 199, 121 Crescent St, Brockton, Mass.* Magic-Vulc No. 245-B may be brushed or sprayed; requires neither primer nor accelerator.

COATINGS—*Durable Rubber Products Co, 549 W Fullerton St, Chicago 6.* Pressure-sensitive, dry-adhesive, can be applied to both sides of sponge rubber. Thickness up to 1 in. in strip or die-cut form.

TWELVE-PURPOSE STAMP — *Cossman Stamp Co, 6612 Sunset Blvd, Hollywood 28, Calif.* Incorporates: Via Air Mail, Printed Matter, Please Remit, Special Delivery, Hand Stamp Only, First Class Mail, etc.



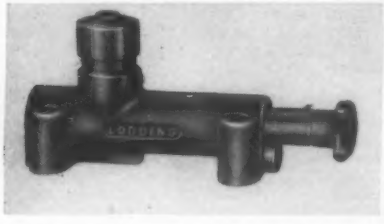
HAMMER MILL—*Schutte Pulverizer Co, 27 Clyde Ave, Buffalo 15, NY.* Only a few seconds are required to withdraw one screen and insert another while the mill is running. Cover does not have to be open and there is no exposure to whirling hammers.



MOUNTING PAD—*The Felters Co, 210 South Street, Boston 11, Mass.* Designated Type T Unisorb, material is available ⅜ in. thick to carry load of 75 to 125 psi.

RUBBER KNEE PADS — *General Scientific Equipment Co, 2700 W Huntington St, Philadelphia 2.* Soft sponge, fit any size knee. Non-slip waffle tread grips wet or slippery surfaces.

DAMPER PADS—*Korfund Co, 48-39B 32nd Place, LIC 1, NY.* Made of cork plate bonded between two layers of neoprene rubber, ribbed for deflection resistance.



HEAVY-DUTY JACK—*Lodding, Inc, Dept N 63, 79 Beacon St, Worcester 1, Mass.* Horizontal in shape with low over-all height. Working mechanism is protected by a cap; working parts are of hardened tool steel.

JACK—*Duff-Norton Mfg, Co, Pittsburgh.* Hydraulic Lo-Hite, 38 lb, raises up to 30 tons for repair jobs on overhead cranes. Can be operated from the ground, stands 6½ in. at highest.

SCISSORS JACK—*Hydraulic Frame Jack Co, 8111 S Western Ave, Los Angeles, Calif.* Hydraulic, has been tested for 5000 lb, with rated capacity of 1-½ tons.

LEVELING JACKS — *Enterprise Machine Parts Corp, 2731 Jerome Ave, Detroit 12, Mich.* Style JD-1 is for light to medium-weight equipment, JD-2 for medium-heavy, JD-3 for heavy duty.

LEVELING JACKS — *Enterprise Machine Parts Corp, 2731 Jerome Ave, Detroit 12, Mich.* In addition to greater strength, changes allow greater compensation for any floor unevenness.

LABELS—*Professional Tape Co, Box 41, Riverside, Ill.* Self-stick in roll form. From ¾ to 2 in. wide; can take typing.

FELT SEALING TAPE—*Products Research Co, 3126 Los Feliz Boulevard, Los Angeles 39, Calif.* Elimination of backing material makes tape easier to unroll and handle. This is achieved as a result of special felt-treating process. The material is Kling Felt 300.

WHITE STEEL TAPE—*Evans & Co, Elizabeth, NJ.* 12-ft pocket size, marked off in inches, and foot-and-inches. First six inches are marked off in 32nds.

NAMEPLATES—*Park Nameplate Co, 61-07 32nd Ave, Woodside 77, NY.* Made of 0.003-in. or 0.005-in.-thick anodized aluminum backed by a pressure-sensitive adhesive.

WATER PURIFICATION — *Salem-Brosius, Inc, 248 Fourth Ave, Pittsburgh 22.* Hyla Process is said to effectively kill bacteria and eliminate bad odors and taste. Residual kill characteristic gives treated water ability to continue to kill bacteria long after purification.

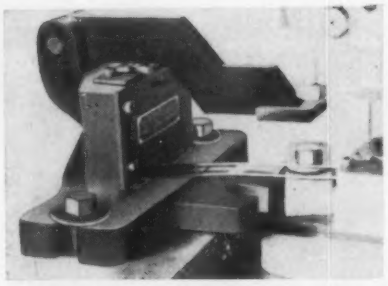
MAGNETIC SEPARATOR — *Eriez Manufacturing Co, Erie, Pa.* Reclaims steel containing expensive metals from non-magnetic material—i.e., media employed in grinding, polishing, and tumbling operations.

PHOTO-CHEMICAL NAMEPLATES —*Henry G Dietz Co, 12-16 Astoria Blvd, Long Island 2, NY.* Ten reproductions made at unit cost almost as cheap as 500. Can be supplied on any non-porous surface, and are also obtainable on 0.003-in. thickness of aluminum foil backed with a high tensile bonding material.

HYDRAULIC EQUIPMENT — *Blackhawk Mfg Co, Milwaukee 46, Wis.* For industrial maintenance and construction work, 46-piece assortment has remotely-controlled hydraulic jacks and attachments for pulling gears, moving machinery, and other maintenance jobs.

COMMUNICATION DEVICES—*Stewart-Warner Electric, Div Stewart-Warner Corp, Chicago 14, Ill.* Two new devices for short or intermediate range communication—battery-powered megaphone for distances up to one-quarter mile and radio trans-ceiver for two-way communication.

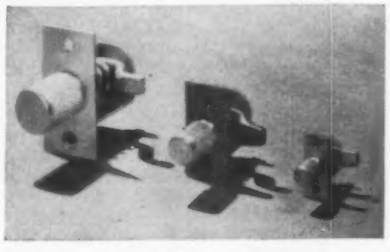
INTERCOM SYSTEM—*Talk-A-Phone 1512 S Pulaski, Chicago 23.* Master selective system for use in large areas and to overcome high noise levels. Model AC-5406 master station with five substation capacity, and AC-5411 with ten substations.



SCRAP CHOPPER—*Jaco Devices, Inc, 90 High St, Hingham, Mass.* Clamps to press bed and handles steel up to 3 in. wide and 0.062 in. thick.

SPRAY BOOTH COAT—*The DuBois Co, 1120 W Front St, Cincinnati 3, Ohio.* Resistance to alkalis, acids, oils, grease, fats, alcohol, gasoline, and fire.

LEATHER PRESERVATIVE — *Dow Corning Corp, Midland, Mich.* Shoe Saver, silicone material, keeps work shoes and leather equipment soft and pliable. Fluid, applied with cloth or swab.



ADJUSTABLE PAWL FASTENERS —*Southco Div, South Chester Corp, Lester, Pa.* For quarter-turn closure or opening of hinged doors and panels on machinery and equipment. Three sizes and head styles meet requirements for most machine and electronic requirements.

PLASTIC BALLS—*Jergens Tool Specialty Co, 712 E 163rd St, Cleveland, Ohio.* Use as knobs on clutches, gears, and levers on machine tools; three OD dias, 2, 1⅝, and 1 in.

SKIN CLEANER DISPENSER — *Sugar Beet Products Co, Saginaw, Mich.* A two-way feed adjustment provides choice of amount dispensed; the spout is of no-drip type. The entire unit is constructed of heavy aluminum.

WORK CAP — *Record Industrial Co, 3301 Arch St, Philadelphia 4, Penna.* Made of neoprene-soaked paper. Said to give same effective life as cloth cap, at about 30% cost saving.

BELTING PRESERVATIVE — *The Viscol Co, 18 East Ave, Bridgeport, Conn.* Contains no oil, grease, or resin. Insoluble in water, it is designed to repel water and steam.

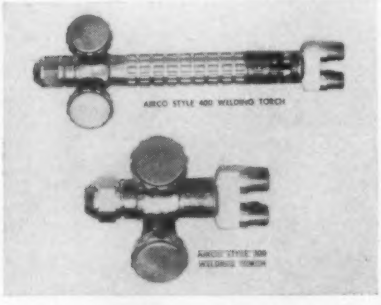
FACTORY ACCESS DOORS—*American Hard Rubber Co, 93 Worth St, New York 13, NY.* Lightweight plywood reinforced with steel and completely covered with a tough hide of soft rubber.

American Machinist
1955
PRODUCTION PREVIEW

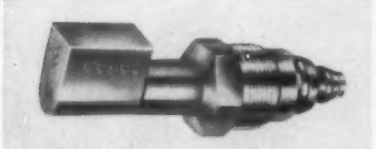
WELDING AND HEAT-TREATING

summarized from descriptions published during 1954

WELDING OUTFIT—*Linde Air Products Co, Div Union Carbide & Carbon Corp, 30 E 42nd St, New York 17.* Portable kit includes double-duty blowpipe with interchangeable welding and cutting tips, pressure regulators, double hose, goggles, and wrench.



TORCHES—*Air Reduction Sales Co, 60 E 42nd St, New York 17, NY.* Model 400, for light welding and brazing, is 5¾ in. long, weighs 6 oz. Model 300 is for oxyacetylene burning or welding of lead products and light production work. The 5-oz unit is 2½ in. long.



CUTTING TIP—*National Cylinder Gas Co, 840 N Michigan Ave, Chicago 11, Ill.* Cut bevels on steel plate of ½ to 2-in. thickness. Added set of orifices permit six additional preheat flames to impinge on line of cut.

GAS-CUTTING TORCH—*Smith Welding Equipment Corp, Dept P854, 2633 Fourth St, SE, Minneapolis 14.* Copper, slip-on tips. Handle rotates to accommodate cutting jet lever in under- or over-handle positions. Head angle 75° or 90°. 2- and 3-hose models.

WELDING UNIT—*Burdett Oxygen Co of California, 2014 Belgrave Ave, Huntington Park, Calif.* Portable; for light gas welding; can be used for aluminum alloys. Basic unit is 80-cu-ft oxygen cylinder; full B acetylene cylinder.

FLAME CUTTING GAS — *Acetogen Gas Co, 20137 Sherwood, Detroit 34, Mich.* Acetogen finds applications in such operations as cutting, annealing, case-hardening, aluminum welding, scarfing, brazing, rivet burning, and silver soldering. The cost is said to be from 30 to 50% of that of acetylene, and cutting action as fast.

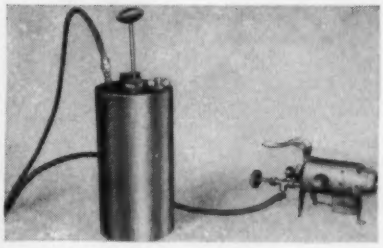
WELDING TORCH—*National Cylinder Gas Co, 840 N Michigan Ave, Chicago 11, Ill.* Torch-weld 45 welds steel from 28 gage to ½ in. thick. Weight is 11 oz, including mixer.

PROPANE TORCH—*Otto Bernz Co, Inc, 280 Lyell Ave, Rochester, NY.* Bernz-O-Matic can be operated in any position. It requires no pumping, priming, or preheating, even in sub-zero temperatures. Flame burns up to 2300 F.

PROPANE TORCH — *Velocity-Power Tool Co, 201 N Braddock Ave, Pittsburgh 8.* Type P Torch-O-Matic, pistol-shaped, for soldering, burning, sweating. Squeeze of trigger produces pinpoint, or full 6-in. flame.

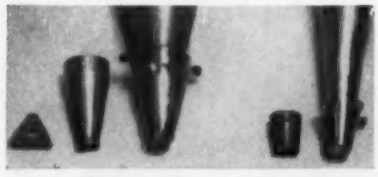
CUTTING ATTACHMENTS—*Air Reduction Sales Co, 60 E 42nd St, New York 17.* Attachments and jet-type mixer extend cutting, welding, and heating range of Airco Style 800 oxyacetylene torch. Style 1800 cuts steel to 6 in. thick and Style 2800 to 8 in. thick.

FLAME-CUTTING MACHINE — *The Burdett Oxygen Co, 3300 Lakeside Ave, Cleveland 14.* Portable, weighing 16 lb. Cuts straight, bevel, circles, or irregular shapes. Thickness capacity from ⅛ to 4 in. Powered by 110v, 60c motor.

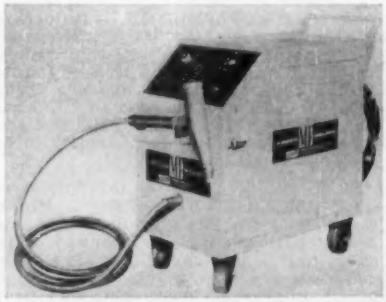


BLOW TORCH—*Perfection Stove Co, 7609 Platt Ave, Cleveland 3, Ohio.* Temperature range to as low as 70°. Preheats its own combustion air and has separate fuel tank supplying fuel under low pressure (45 psi).

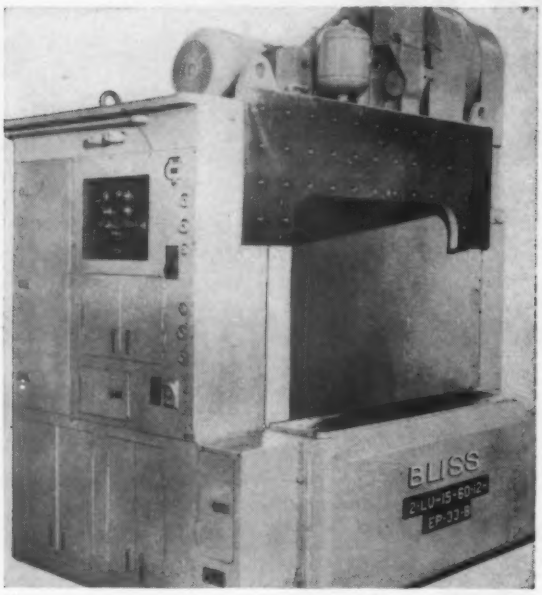
FLOATING TORCH ASSEMBLY — *National Cylinder Gas Co, 840 N Michigan Ave, Chicago 11, Ill.* Permits uniformly accurate bevel cutting regardless of unevenness in steel plate. For use with Cut-O-Matic portable cutting machine. Guide wheel, which rests on plate being cut, controls distance between torch tip and plate.



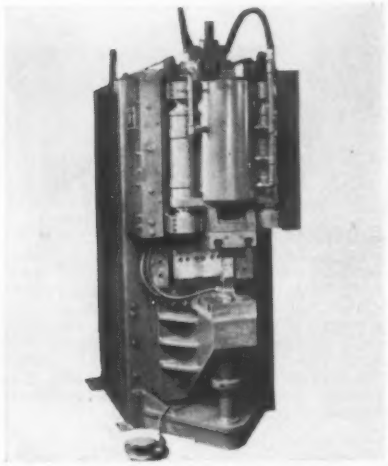
SEMI-AUTOMATIC WELDER — *Stoody Co, Whittier, Calif.* Nozzle adapter for the conventional semi-automatic or squirt welder makes possible deposit of various alloys at high speeds. Process utilizes the magnetic field created by the passage of the electric current through the bare electrode, plus a magnetic alloy flux which coats the wire immediately ahead of the welding arc.



WELDING MACHINE — *American Brake Shoe Co, 230 Park Ave, New York 17, NY.* Feeds bare wire through hand-held hopper containing magnetic flux. Connects to conventional ac or dc machine. Use of magnetic flux and magnetic gate on hopper nozzle reported as new.



WELDING PRESS — *E W Bliss Co, 1375 Raff Rd, Canton, Ohio.* Beds are 12 in. deep. Strokes are 8 and 10 or 8 and 12 in. The 4L has a bed 72x38 in., the 4LU, 69x29 in. Shut height is 44 and 30 in., respectively, with spm from 2 to 40 for 4L and 20 to 60 for 4LU.



PROJECTION WELDER — *Universal Welder Corp, 2557 E 79th St, Cleveland 4.* Combines high welding pressure with fast ram action, particularly suited to light metals. Ratings are from 5000 to 18,000 psi and 250 to 500 kva. Stroke range is ½ to 2 in. Retraction-stroke ram available to provide 3 to 6-in. additional travel.

ARC WELDER—*Kasson Die & Motor Corp, 32-14 Northern Boulevard, Long Island City, NY.* Bren/Weld portable 65-lb unit operates on either 110 or 220 v, ac, 60 cycles, with a rated output of 20 amp. Will braze, cut, and preheat as well as weld steel up to and including 1½ in. thick.

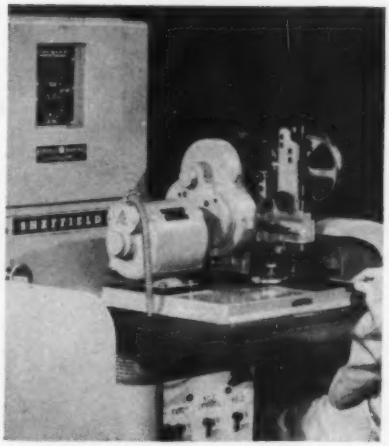
WELDER—*The Lincoln Electric Co, Cleveland 17.* Fleetwelder Special, heavy-duty ac machine for production work in 300, 400, and 500 amp, NEMA-rated, sizes.

AUTOMATIC WELDING MACHINE —*Reynolds Metals Co, 2500 S Third St, Louisville, Ky.* Portable unit; welds 40-ft sections of 8-and-⅝-in. aluminum pipe in average time of 4 min. for five-pass weld.

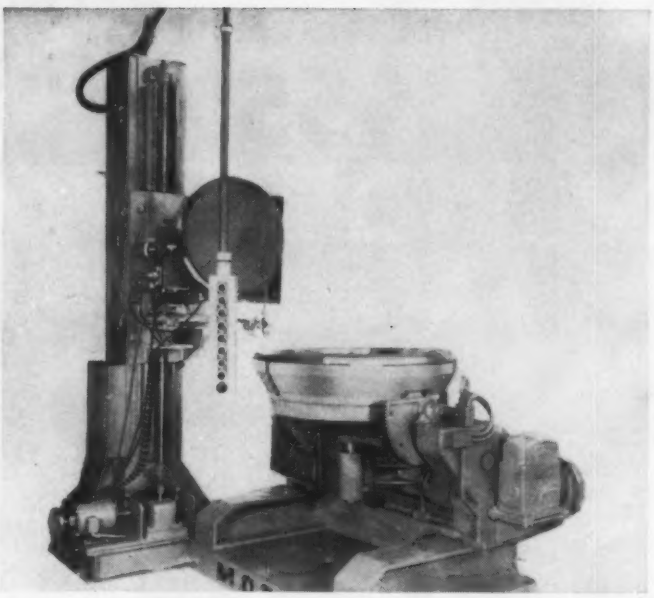
PRODUCTION WELDERS — *General Electric Co, Schnectady 5, NY.* Line with NEMA ratings of 300, 400, and 500 amp. Stepless current control; aluminum coil windings; silicone insulation.

SLAG-GAS SHIELDED WELDING — *Bernard Welding Equipment Co, 10232 South Avenue N, Chicago 17.* Manually applied, semi-automatic welding process deposits electrode metal at 10 to 40 lb per hour. Electrode is tubular in construction and a flux is contained within the cavity of the tube. Welding current, arc-column shielding gas, water, all pass through handle of torch.

WELDING MACHINE—*Master Tank and Welding, Dallas, Texas.* Handles pressure vessels to 120 ft long by 16 ft in dia and weighing 100,000 lb. It is motor powered, works by remote control from front panel.

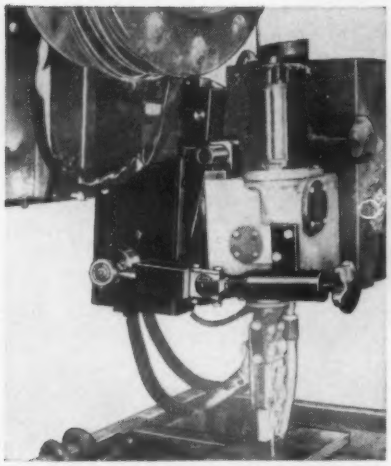


WELDING MACHINES—*The Sheffield Corp, Dayton 1, Ohio.* Disk- and point-type automatic units for high-speed welding of metal contacts to instrument components. Production rate from 1200 to 2400 contacts per hr.



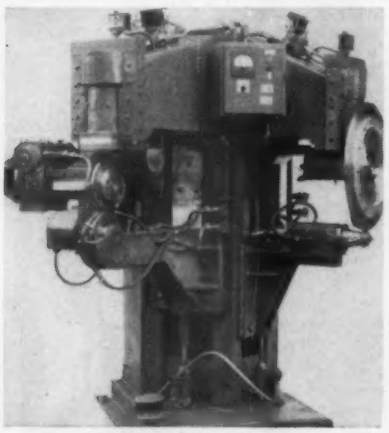
UNIVERSAL GIRTH WELDER — *Morton Mfg Co, Bway & Hoyt St, Muskegon Heights, Mich.* Incorporates heavy-duty positioner and vertical column for flexible weld head positioning. Rotary table speeds are widely variable and there is provision for air, water, or gas into fixtures. All weld and operating controls are on pendant station.

SEAM WELDER—*Dyer Weld Co, Kansas City, Missouri.* Electrode shaft bushings convey 95% continuous current to rollers and work. Travel speed controlled by regulator permitting 1 to 30 fpm.

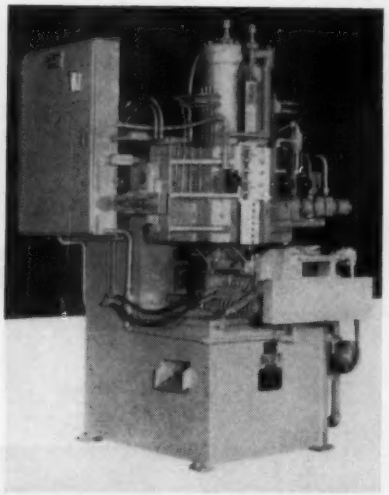


AUTOMATIC WELDING EQUIPMENT — *The Lincoln Electric Co, Cleveland 17.* Produces beads up to 4 in. wide in a single pass. Spreadarc attachment mounts on standard Lincolnweld automatic head and oscillates head back and forth at right angles to direction of travel, with amount of oscillation controlled to produce pads of weld metal up to 4 in. in width.

FLASH-TRIMMING MACHINE—*Morton Mfg Co, Broadway & Hoyt, Muskegon Heights, Mich.* Vertical hydraulic unit removes flash from inside and outside of thick-wall welded rings and cylinders. Capacity of ¼-in.-min to ¾-in.-max thickness, and from 6-in.-min inside to 24-in.-max outside capacity. Handles 4-, 7-, and 10-in. lengths of work. Cutting speed 60 fpm.



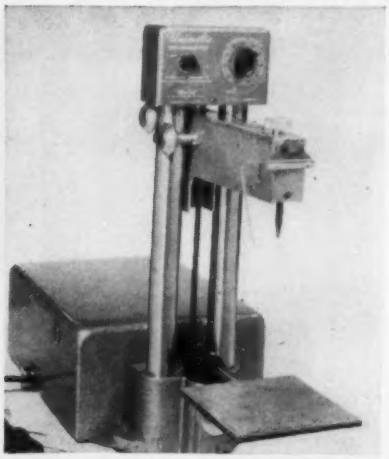
DUAL HEAD MACHINE—*Universal Welder Corp, 2557 East 79th St, Cleveland 4, Ohio.* Resistance seam welding machine maintains complete setups for longitudinal or circular seam welding. Mounting two heads at 90°, the unit can be switched from circumferential to straight line work by switch control.



TWO-MACHINE PROCESS — *Swift Electric Welder Co, 8095 Livernois, Detroit 4, Mich.* For welding and trimming transmission bands. Welding machine welds band to forging, while vertical broaching machine performs trimming operation.

BANDSAW WELDER—*Kasson Die & Motor Corp, 32-14 Northern Blvd, Long Island City 1, NY.* Portable; larger transformer; takes blades from 1/16 to ¾ in. wide; 50% larger motor.

ARC WELDING PROCESS—*Westinghouse Electric Corp, Arc Welding Dept, Buffalo, NY.* Higher welding speeds, better quality welds, and lower operating costs reported for new consumable-electrode, inert-gas, welding process—key to which is a coated wire used with newly designed welding gun, feed-wire control, and dc arc welder.



SPOTWELDER—*Radio Receptor Co, Inc, 253 W 19th St, New York.* Unimatic Model 1015 Weldmaster is stored-energy electronic welder for sheet 0.0001 to 0.020 in. thick and wire 0.0005 to 0.040-in. dia. Will handle copper, silver, beryllium copper, nickel alloys, and other difficult metals. Stroke is 1/16 to 1 in., throat depth 6 in., vertical opening zero to 4 ft.

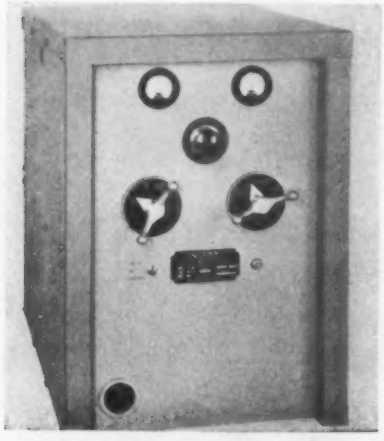
RESISTANCE WELDER—*Royson Engineering, Hatboro, Pa.* Dual heads of 1-kva unit can be independently adjusted for pressure, time, and heat. Handles strip and wire to 1/32 in. Electrodes and holders adjustable.

RECTIFIER WELDER — *General Electric, Schenectady 5, NY.* GE 400-amp, 3-phase, dc rectifier-type welder with 60% duty cycle can be equipped to operate on 2-phase power and has current welding range of 70 to 500 amps. Selenium rectifier allows easy current adjustment by means of stepless current control.

CONSTANT VOLTAGE WELDERS—*Glenn Co, 3134 E 10th St, Oakland 1, Calif.* For powering all metallic-arc automatic processes. Improvements include wider arc voltage range of 18 to 42 v, remote vernier control of arc voltage adjustment.

ARC WELDER—*Miller Electric Mfg Co, Appleton, Wis.* Remote-control "Aircrafter" dc welding machine has current capacities from 5-95, 12-180, and 55-300 amps in three ranges.

RECTIFIER WELDER — *General Electric Co, Schenectady 5, NY.* Offers full-time arc force control for holding short arcs with deep penetration. Model 6WR30B has current range from 20 to 375 amp, stepless current control, accurate amperage settings. Aluminum windings, silicone insulation.



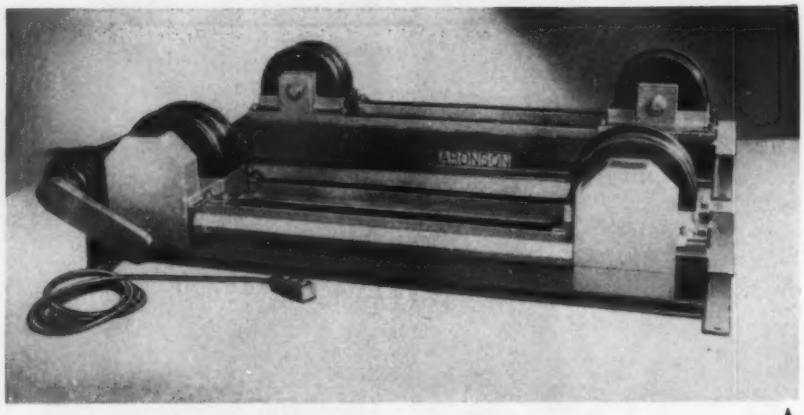
RECTIFIER WELDER—*Glenn Co, 3134 East 10th St, Oakland 1, Calif.* Model 1000 UV-40; for powering submerged arc, insert gas, and other types of automatic welding processes. Infinitely variable preset arc voltage ranges from 18 to 42 v.

CONSTANT-VOLTAGE WELDER — *Hobart Bros, Troy, Ohio.* Separately excited initial current and automatic control on present current. Settings from 20 to 40 v, three models for 400, 600, or 900 amp. Also for submerged-arc or shielded-arc welding.

WELDER—*The Lincoln Electric Co, Cleveland 17.* Combination Weldanpower machine, is rated as 200-amp welder or 4-kva continuous duty power unit. For intermittent standby power it is rated at 5 kva.

ARC WELDER—*Harnischfeger Corp, Welding Div, 4605 West National Ave, Milwaukee, Wis.* Model DA-200, provides both ac and dc welding in single machine. AC, 7 to 275 amp; DC, 7 to 200.

EQUIPMENT CHEST — *KSM Products, Inc, Merchantville, NJ.* Carries complete KSM stud-welding unit, together with work orders and other records.



TURNING ROLL — *Aronson Machine Co, Arcade, NY.* TracTred available in three basic models: T1 with single strand Trac, T2 with double strand, T3 with triple strand in both idler and power units. Current carrying capacity has been tested safe at 600 amp for T1, 1000 amp for T2, and 1500 amp for T3.

WELDING POSITIONERS—*Aronson Machine Co, Arcade, NY.* Models HD160 and HD240 gear-driven positioners have totally enclosed table-rotation gears with minimum backlash and magnetic breaking. Tables tilt 135° in 46 sec with full load.

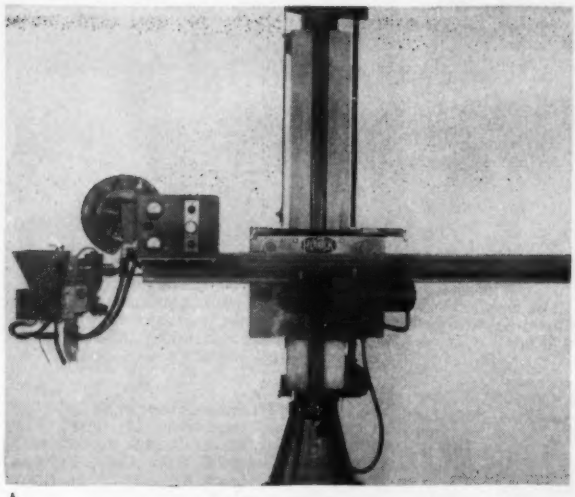
WELDERS' TEST KIT—*CBC Welding Corp, 422 E 102nd St, New York 29, NY.* Conforms to Air, Navy, Ordnance specification MIL-T-5021; consists of two clusters, 1 plate, 2 crosses, 2 sets of tubes, all made of chrome molybdenum.

WELD FUME EXHAUSTER — *Engwald Corp, 357 Lafayette Ave, Brooklyn 38, NY.* Adjustable cone hood collects fumes, draws them through exhaust hose into large cone opening before they can circulate. Works through 360° when ceiling-mounted, 180° wall-mounted.

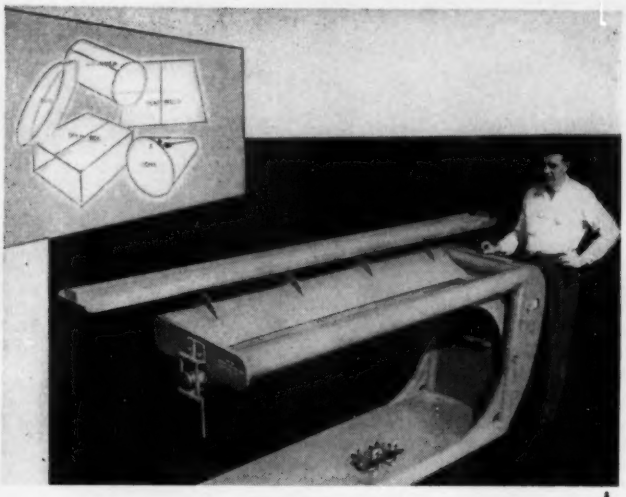
WELDING POSITIONER—*American Equipment Co, Dept 13, 7 Albion St, Paterson, NJ.* Equipped with gear-type fluid-drive motor; infinite range of speeds. Hand or power table tilt.

TURNING ROLLS—*Aronson Machine Co, Arcade, NY.* Cylindrical work with dia from 8 in. to 16 ft is rotated for welding by automatic series with capacity from 5000 to 100,000 lb. Turning speeds are 0 to 80 ipm in the 5000-lb class, and 0 to 38 ipm at 100,000 lb.

VARIABLE-SPEED HEADSTOCK—*Aronson Machine Co, Arcade, NY.* Model HS16V, 16,000-lb-capacity infinitely-variable-speed headstock has table-rotation speed range from 0 to 0.57 rpm controlled by micrometer dial indicator with 37 major graduations and 10 micrometer marks per major graduation.

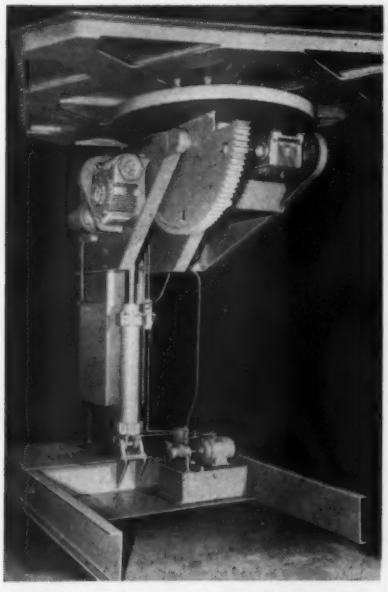


AUTOMATIC WELDING FIXTURE—*C B Herrick Mfg Corp, 1935 Euclid Ave, Cleveland 15, Ohio.* May be mounted on carriage to travel longitudinally on special track. Track speed is variable from 0 to 100 ipm. Motorized vertical adjustment ranges from 13 in. to 6 ft. Tubular column, containing counterweight and ram, rotates 360°.



WELDING FIXTURE—*Airline Welding & Engrg, 785 N Prairie Ave, Hawthorne, Calif.* Longitudinal welds from 2 to 12 ft long are made on fixture which holds and aligns edges of material 0.0005 to 1 in. thick. Copper backup bars slide into grooves in mandrel.

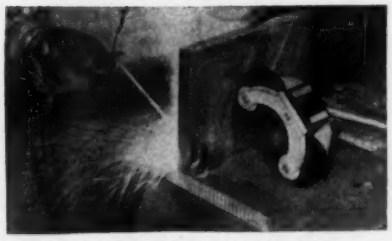
WELDING ROD — *Wall Colmonoy Corp, 10345 John R St, Detroit 3, Mich.* Manganese-nickel-steel welding rod for repairing manganese steel castings can also be used as buildup material prior to applying Colmonoy hardfacing alloys to manganese steel parts. In ¼, 3/16, 5/32 and ⅛-in.-dia bare and coated rods.



WELDING POSITIONERS—*Pandjiris Weldment Co, St Louis, Mo.* Use double-enveloping worm-gear speed reducers; table may be rotated 360°, tilted 135°, and hydraulically lifted 4 ft.

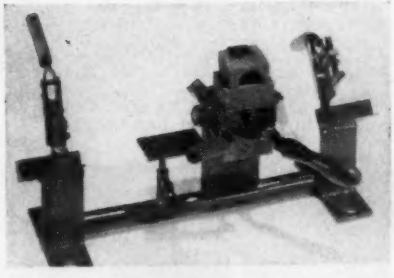
HARDFACING ELECTRODES—*Wall Colmonoy Corp, 19345 John R St, Detroit 3.* Dc electrodes with new metallic coating; made of chromium, boron, and iron composition. Colmonoy No. 1 with extreme impact and high abrasion resistance; Special No. 1 with extreme abrasion and impact resistance.

BRONZE ELECTRODE — *Eutectic Welding Alloys Corp, 40-40 172nd St, Flushing 58, NY.* Bronzochrom electrode. EutecTrode 1850, for high-strength joining and frictional and corrosion resistance. Produces copper base deposits alloyed with silicon, manganese, and chromium.



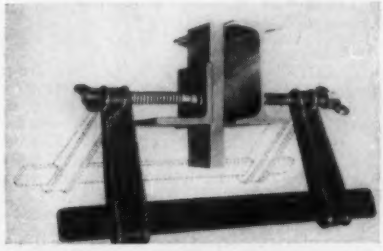
MAGNETIC POSITIONING TOOL — *Standard Portable Card Co, Inc, Jamestown, NY.* Consists of three 45-lb Alnico 5 permanent magnets held in die-cast, high-tensile aluminum frame with 360° adjustment. When positioned, each magnet can be locked in place.

BATTERY UNIT—*KSM Products, Inc, 322 Woodland Ave, Merchantville 8, NJ.* Studs to a ½-in. base dia are welded by equipment operated by hand-truck unit. Twelve 150-amp-hr batteries are carried.



BENCH FIXTURE—*Caddy Arc Welding Accessory Div, Erico Products, 2070 E 61st Place, Cleveland 3.* L-145 for making rapid production Cadweld connections of welding cable to all Caddy arc welding accessories, plus splices of the welding cable.

WELDING ELECTRODE—*All-State Welding Alloys Co, Inc, White Plains, NY.* All-position, ac-dc rod for use on carbon, low alloy, and high strength steels, and other ferrous metals.



WELDING CLAMPS—*Wetzler Clamp Co, 43-15—11th St, Long Island City, NY.* With 3½-in. spindles on high-carbon steel bar, clamp weld work despite obstructions. Throat depths of 4, 5, and 7 in.; max distances between jaws from 8 to 36 in., 5-in. size has 48-in. opening.

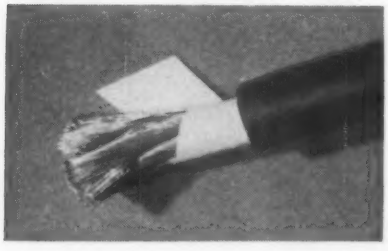
HARDFACING ROD—*Mir-O-Col Alloy Co, 312 North Ave 21, Los Angeles 31, Calif.* Withstands combination of extreme abrasion and very heavy impact.

WELDING and HEAT-TREATING—welding accessories

WELDING TRUCK—*Nelson Bros & Strom Co, Racine, Wis.* Pull chain releases utility table for fast set-up; work space, 21x26x31 in. Tanks are nested in shock-absorbing cradle. Entire load moves on balanced three-wheel carriage.

ELECTRODES — *Metal and Thermit Corp, 100 E 42nd St, New York 17, NY.* Murex contact arc welding electrodes have coatings containing high percentage of iron powder. During welding, powder enters weld.

FLUX—*Andco, Inc, 235 Thorne Ave, Orchard, NY.* Uni-Flux for gas-welding and brazing welds through lead, beryllium, aluminum, bronze, galvanize, copper, rust, grease, paint, tar, and dirt; eliminates need for cleaning.



WELDING CABLE — *Dalweld Co, 1 Bertel Ave, Mt Vernon, NY.* Neoprene compound used in jacket has high resistance to heat, hydrocarbons, oils and greases, and acid attack. Conductor is composed of fine, pure copper wires, stranded for extra flexibility.

WELDING ROD—*All-State Welding Alloys Co, 249-55 Ferris Ave, White Plains, NY.* No. 3 copper-coated general purpose cast iron rod has lower working temp than rod it replaces: 1400 vs 1500 F; requires less pre-heat: 600-800 vs 600-1000. In 3/16 and ¼-in. dia; length is 18 in.

ELECTRODE—*Pacific Welding Alloys Co Inc, 312 North Ave 21, Los Angeles 31, Calif.* "Cham-Cut" for electric-arc cutting, chamfering, gouging, piercing, on all types of steels including cast iron, and stainless, as well as copper and nickel alloys; in ⅛, 5/32, 3/16, and ¼-in. sizes.

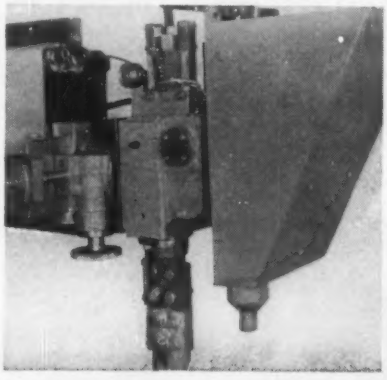
POWDERED METAL ELECTRODE —*Lincoln Electric Co, 22801 St Clair Ave, Cleveland 17.* Jetweld 2 is for welding butt and deep-groove joints. Coating is said to overcome certain operating difficulties of conventional electrodes. Deposition rate is high.

ELECTRODE—*Hobart Bros Co, Dept RE, Troy, Ohio.* Rocket No. 24 for faster horizontal and downhand welding on mild and medium carbon steel.

ELECTRODE—*Pacific Welding Alloys Mfg Co, 310 North Ave 21, Los Angeles 31, Calif.* Welds brass, bronze, copper, cast iron, and steel in all positions. Protective coating on rods.

ELECTRODE HOLDERS — *Cam-Lok Div, Empire Products, Inc, PO Box 98, W-3, Cincinnati 36, Ohio.* Inside mechanism suspended in handle for better ventilation and cool operation. Straight-nose or offset pug-nose holder types take up to ¼-in. rod.

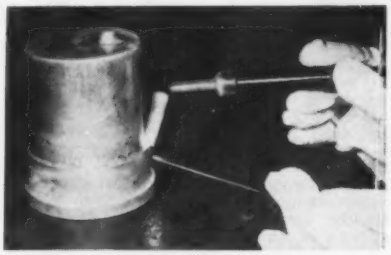
ALUMINUM ROD—*All-State Welding Alloys Co, 249-55 Ferris Ave, White Plains, NY.* All-State No. 35 FC flux-coated, for both carbon arc and torch welding, for work on aluminum types 3S, 14S, 43S, 52S, 53S, and 61S.



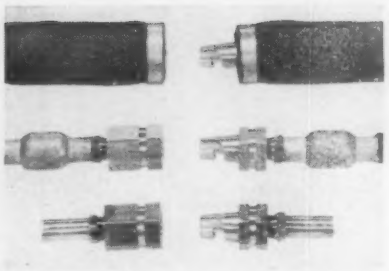
WELD HEAD POSITIONER—*Cecil C Peck Co, 4614 Prospect Ave, Cleveland 3.* Uneek head mount can be adjusted for lateral or angular movement, or 90° stationary positioning of head. Fits all std welding heads.

POWDERED METAL—*Farrelloy Co, 1217 N 26th St, Philadelphia 21, Pa.* Farco Branc Z was developed for restoring galvanized coating and repairing areas damaged by welding. It has withstood 800 hours in a 20% salt spray without rusting. Price, $3 per 2-lb can.

WELD CLEANING TOOLS — *Atlas Welding Accessories Co, 707 E Lewiston, Ferndale, Detroit 20.* Brush is pitched at angle to handle. Chisel is welded to frame and handle.



HELIWELD HOLDER—*Air Reduction Sales Co New York 17.* H12A takes 2-, 3-, and 7-in. lengths of caps, water-cooled cable, tungsten electrode sizes; 0.020, 0.40, 1/16 3/32 in. Rating, 125 amps.



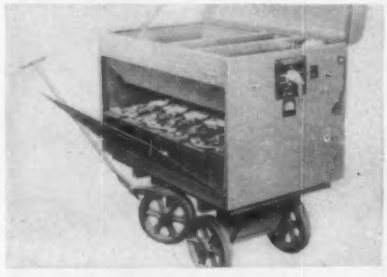
CONNECTOR — *Erico Products, Inc, 2070 East 61st Pl, Cleveland 3.* Permanent connections; positive wedging and locking action; durable rubber insulation; 500 amp capacity.

WELDING FLUX—*Ampco Metal, 1745 S 38th St, Milwaukee 46, Wis.* For welding aluminum bronze sheet and plate; may be used with the inert-gas processes and bare Ampco-Trode filler rods in all grades.

CONTACT WELDING ELECTRODE —*General Electric Co, Schenectady 5, NY.* Best suited for work on mild and medium carbon steel. The electrode can be used for many operations requiring AWS classes E6012 and E6020.

WELDING ELECTRODES — *Pacific Welding Alloy Mfg Co, 310 North Ave 21, Los Angeles 31, Calif.* Stainless steel. 15 types for ac or dc. Fast rate of deposit.

FLUX VALVE — *C B Herrick Mfg Corp, 2000 Center St, Cleveland.* Gives positive control of flow of flux on automatic, submerged-arc welding applications. Operates with all Type LAF-2 welding heads.



WELDING BATTERY—*KSM Products, Inc, 322 Woodland Ave, Merchantville 8, NJ.* Portable unit holds 12 heavy-duty wet batteries of 150 amp-hr rating for operating stud welder. Integral automatic charger test-checks open-circuit voltage every 10 min.

WELDING ACCESSORIES — *Arcos Corp, 1500 S 50th St, Philadelphia 43.* New method of packaging electrodes; flux for submerged arc welding of stainless; a line of specialty stainless steel wire; a weld insert for stainless pipe; products for welding aluminum.

ALUMINUM WELDING ELECTRODE—*Aluminum Co of America, 738 Alcoa Bldg, Pittsburgh 10.* For use in existing consumable-electrode shielded-arc processes. Produced in 2S, 43S, and A54S alloys. Packaged on fiber spools in sizes from 0.030 to ⅛-in. diameter. Tolerances on diameters are +0.001, –0.002 in.

welding accessories, soldering, brazing, plating—WELDING and HEAT-TREATING

ELECTRODE HOLDER—*Erico Products, Inc, 2070 E 61st Place, Cleveland 3.* Caddy Cub Type B-20, rated at 300 amps, weighs 14 ozs. Handle is molded glass-fiber-reinforced plastic. Operates 1/16 to 3/16-in. electrodes continuously, ¼-in. intermittently.

FILLER RODS—*Ampco Metal, Inc, 1745 S Thirty-eight St, Milwaukee 46, Wis.* Covered or bare; 36 in long, of Ampco 10, 160, 200, 250, and 300. For carbon arc and inert-gas tungsten-arc welding.

ELECTRODE-HOLDER — *Tweco Products Co, Boston at Mosley, Wichita 1, Kan.* 400-amp rating; will handle electrodes from 3/32 to 5/16 in. Air vents carry heat from arc.

ELECTRODE—*Eutectic Welding Alloys Corp, 40-40 172 St, Flushing 58, NY.* For welding cast iron. 3/32-in. electrode operates on 35 to 75 amps.

POWDERED METAL—*Air Reduction Sales Co, 60 E 42nd St, New York 17, NY.* Added to electrode coating to double welding speed, reduce spatter, and provide strong, ductile welds.

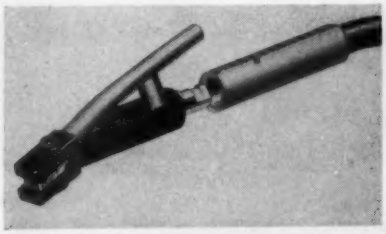
WELDING-WIRE—*Ampco Metal, Inc, 1745 S Thirty-Eight St, Milwaukee 46, Wis.* Inert-gas consumable-electrode in coiled form in 0.045, 1/16, and 3/32-in. diameters, on reels and rims.

LOCK FASTENER—*Davis Emergency Equipment Co, 45 Halleck St, Newark, NJ.* Permits quick attachment and separation of welding mask and helmet without removing helmet from head.

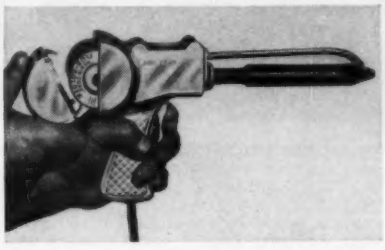
COLD-WELD TOOL — *Utica Drop Forge and Tool Corp, Utica 4, NY.* Operates with plier action to join aluminum or copper wire with flanged-welded joints reported stronger than the original wire.

ELECTRODE—*Champion Rivet Co, 10853 Harvard Ave, Cleveland 5.* Speedemon No. 500, touch-type produces welds on mild, high-carbon, cast steel and manganese steel. Speedemon No. 12 has high iron powder content coating.

ELECTRODES—*Stulz-Stickles Co, 134 Lafayette St, Newark, NJ.* Manganese-nickel for ac and dc welding. Can be cut with ordinary oxy-acetylene flame.



CONNECTOR—*Cam-Lok Div, Empire Products, Inc, Box 98E3, Cincinnati 36, Ohio.* Any cable can be connected to Cam-Lok electrode holders by adding Cam-Lok female connector. Pug-nose and straight-nose units with double cam design.



SOLDERING GUN — *Scotco Products Co, Beverly, Mass.* Feeds spool solder (either acid, resin, or plain) through upper tube to hot tip. Solder strip, 1/16-in. or 3/32-in. dia is controlled by trigger action.

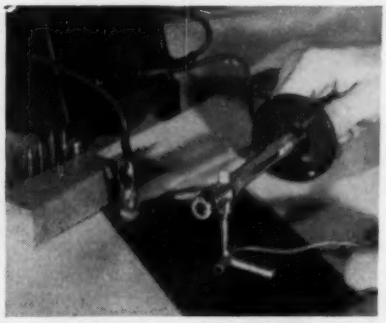
SOLDER FLUXES—*Alpha Metals, 56 Water St, Jersey City 4, NJ.* External, ranging from mild non-corrosive rosin type to strong, highly-active stainless steel.

SOLDERING IRON—*Hexacon Electric Co, 135 W Clay Ave, Roselle Park, NJ.* 3-oz hatchet design for instruments, small electronic equipment, sub-assemblies. Operates on ac or dc, any cycle; 110 and 220 v.

SOLDERING TOOL—*Stark Manufacturing Co, PO Box 489, Tuscaloosa, Ala.* Operating voltages at tip 3½ to 12½ volts; no heat generated except when in contact with work. Enclosed transformer protected with 4-amp fuse.

ULTRASONIC SOLDERING UNIT—*Aeroprojects Inc, West Chester, Penna.* Tins aluminum, copper, magnesium, and silver, without flux. Company's pilot plant has standard and prototype equipment available on contract basis.

SOLDERING GUN — *Weller Electric Corp, 808 Packer St, Easton, Pa.* Model D-550 has 5-sec heating and tip-fastening arrangement for full constant heat. Piston-grip has been centered for better balance.



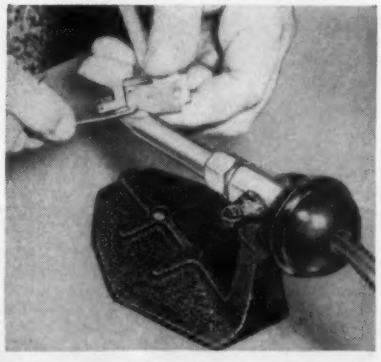
LOW-VOLTAGE SOLDERER — *Newage International, 235 E 42nd St, New York 17.* Lorsol spot tool heats instantly when tip contacts work, shuts off when removed. Six heats available from transformer. Two angled carbon tips can be operated in addition to end fitting.

SOLDERING PASTE—*All-State Welding Alloys Co, 249-55 Ferris Ave, New York, NY.* Compounded of flux and solder, is applied cold, then heated, any way, to 375 F to seal, join, or tin most common metals.

SOLDER — *Eutectic Welding Alloys Corp, 40-40 172nd St, Flushing 58, NY.* AluTin 51 for production, filling, sealing, and repair operations on wrought and cast aluminum alloys. Melting range is between 400 and 500 F; tensile strength up to 7000 psi.

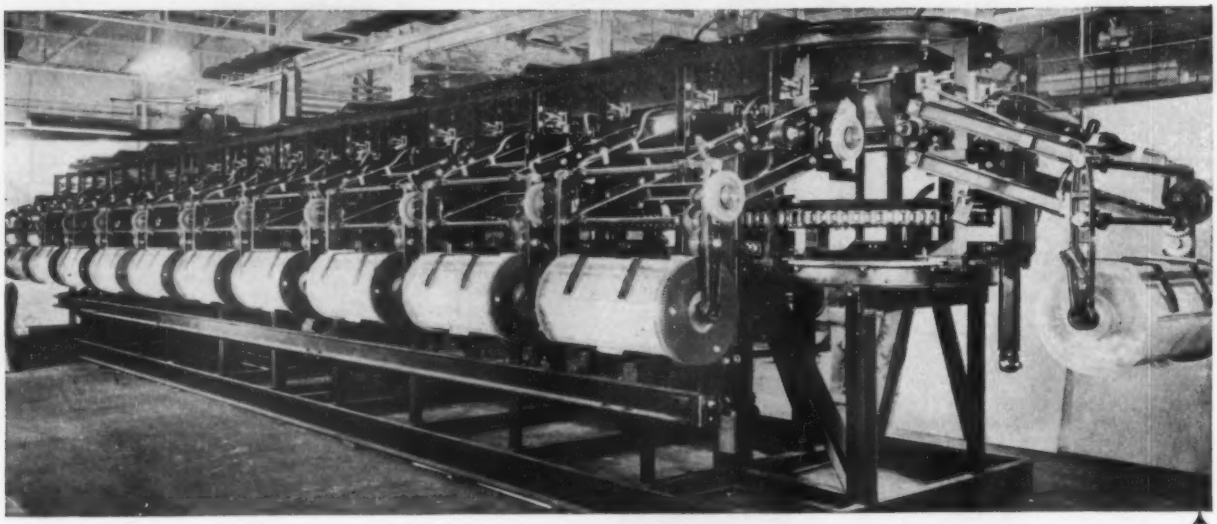
SOLDERING-IRON — *Hexacon Electric Co, 135 W Clay Ave, Roselle Park, NJ.* Plug-tip design, rated at 100 w, but with ¼-in. tip. No. P-114.

SOLDERING IRON—*Hexacon Electric Co, 135 W Clay Ave, Roselle Park, NJ.* 3 oz; 25 w with ⅛-in. tip (No. 25H) or 30 w with 3/16-in. tip (No. 26H).



SOLDERING IRON — *Vari Corp, 619 Fourth Ave South, Minneapolis 15.* Fixed-base Model F has adjustable tip positioning and interchangeable tips, mounts vertically or horizontally. Tip point can be set from 1½ to 5 in. from base; tip and barrel assembly to cover 180°.

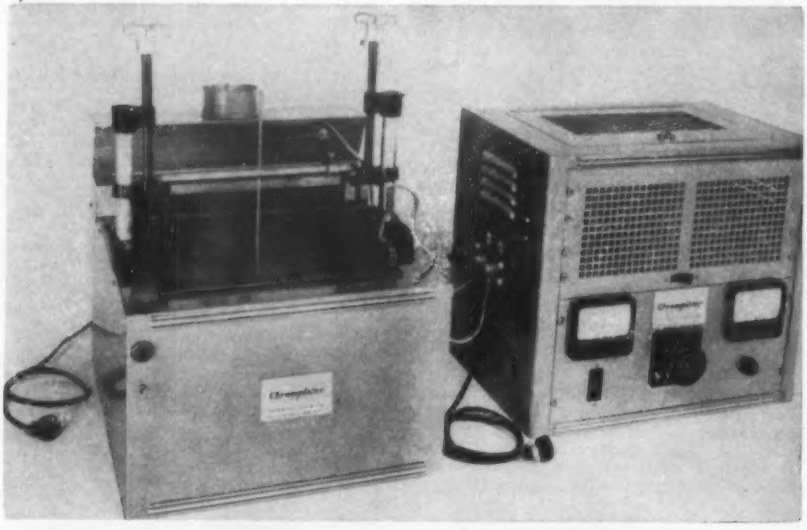
SOLDERING GUN—*Garden City Industries, Inc, 900 W Jackson Blvd, Chicago 7.* Lightweight soldering guns have steel-clad tips, thermostatic control to regulate power consumption. 10-watt spotlight with separate switch. Models 212LT and 214LTN have interchangeable tips and assemblies, with wattage requirements from 150 to 650. Ac or dc, UL approved.

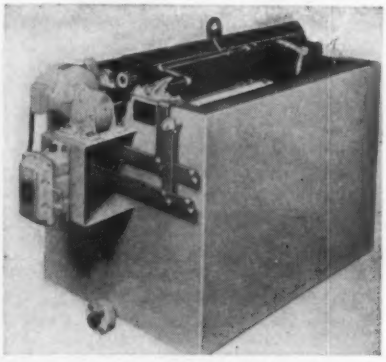


PLATING UNITS—*The Dawson Corp, 302 Fifth Ave, North Pelham, NY.* Model 75 Chromplater for smaller components. It will deposit 0.002 in. per hr on areas to 25 sq in. Improved plating solution eliminates bath adjustment.

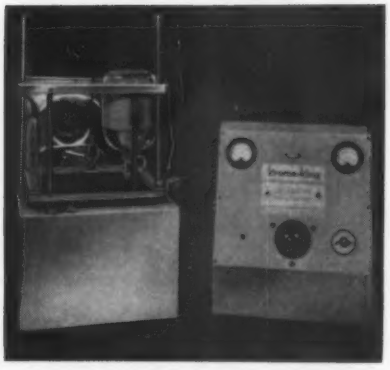
PLATING PROCESS—*Enequist Chemical Co, 100 Varick Ave, Brooklyn 37, NY.* Deposition of black plate on all metals except aluminum. On diecast metals, a thin copper or brass undercoat suffices.

PLATING-BARREL CONVEYOR — *Udylite Corp, Detroit 11.* Automatic conveyor adapts to any std plating process, uses std, horizontal plating barrels. Timer-controlled speed and power-operated skip transfers provide flexibility. Cylinder rpm variable at each station. Power hopper, with scale, permits pushbutton loading.



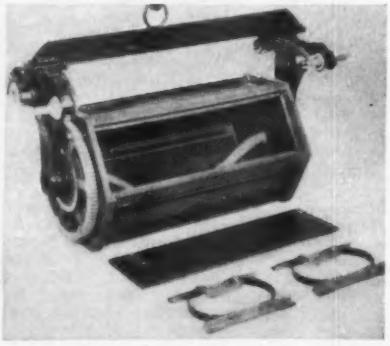


PLATING TANK — *Hanson-Van Winkle-Munning Co, Matawan, NJ.* For barrel electro-plating. Key improvements are: flanges turned in to save space; motor drive more compact and relocated; saddles permit operator to guide barrel into position more easily.



PLATING CONVEYOR—*Hanson-Van Winkle-Munning Co, Matawan, NJ.* Blades are automatically transferred from and back to plating conveyor. Unit, with a lift of 10½ ft, is hydraulically operated and has provisions for by-passing or delaying set-down over any station.

ELECTROPLATING RECTIFIERS—*Wagner Bros, Inc, 440 Midland Ave, Detroit 3, Mich.* Application requiring dc current at capacities from 5 to 50,000 amps. Units are three-phase selenium-type rectifier stacks connected for 5% ripple. They can be connected in series, parallel, or series-parallel.



BARREL—*Udylite Corporation, 1651 East Grand Blvd, Detroit 11, Mich.* Tempron hard rubber lines plating barrel. Interlocking barrel panels and ribs permit individual replacement.

CHROME ELECTROPLATER — *National File Co, Lansing, Mich.* Krome-King plating process. Soft, dull chrome is imparted when coated at room temperatures, and a bright, hard, ductile chrome results when the tank is held at 130 F by immersion heating unit.

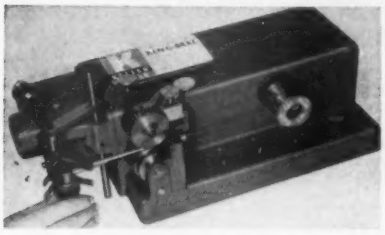
LIQUID INHIBITOR—*Oakite Products, Inc, 12½ Rector St, New York 6.* Oakite Pickle Control No. 5 for sulphuric, hydrochloric, or phosphoric acid. Provides controlled foam blanket on pickling solutions in addition to performing inhibiting function.

PLATING PROCESS — *Hanson-Van Winkle-Munning Co, Matawan, NJ.* Nickel-sulfamate bath plates up to 0.007 in. of nickel per hour; current densities of 140 asf.

PLATING BARREL — *Starline Products, 1717 N Main St, Los Angeles 12, Calif.* Weighs 27 lbs; fabricated in acrylic. Driven by torque-rated geared motor. Metal parts exposed to solution are made of Monel.

CHROMATE REDUCER — *Enthone, Inc, Dept AM, 442 Elm St, New Haven, Conn.* Chromekill 4A for alkaline cleaning and plating solutions.

ADDITIVE—*Udylite Corp, 1653 E Grand Blvd, Detroit 11.* Zero-Mist surface active agent, prevents air and airborne contamination from chromic acid spray and mist in chromium-plating bath operations.



RING-FORMING TOOL—*Keller Tool Co, Grand Haven, Mich.* Forms rings of soft solder or brazing alloy directly onto part to be brazed. Air-operated bench unit. Takes rings from ¼ to 3-in. diameter.

AIR-ACETYLENE SET — *National Cylinder Gas Co, 840 North Michigan Ave, Chicago 11, Ill.* Outfit consists of torch, tips, hose, and adjustable regulator. For brazing with silver or copper alloys, soldering, and heating.

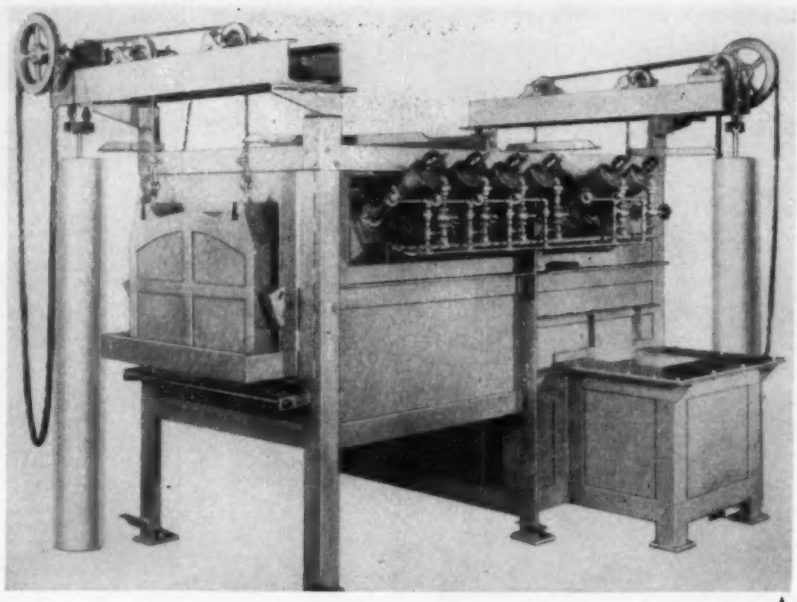
OVERLAY WIRE—*Ampco Metal, Inc, 1745 S Thirty-Eighth St, Milwaukee, Wis.* Phosphor bronze bare wire can also be used for joining brasses, tin, bronzes, cast iron, and other metals.

ALLOY BRAZING RINGS — *Alloy Ring Service, 1095 E 52nd St, Indianapolis 5, Ind.* Packaged on cardboard tubes or dowel rods for speedier use in production; elimination of damage or loss.

FLUX—*Farrelloy Co, 1217 N 26th St, Philadelphia 21.* No. 8 non-corrosive material for copper, brass, terne plate, tinplate, is non-ionizable even under high conditions of humidity, eliminating both electrical leakage and corrosion.

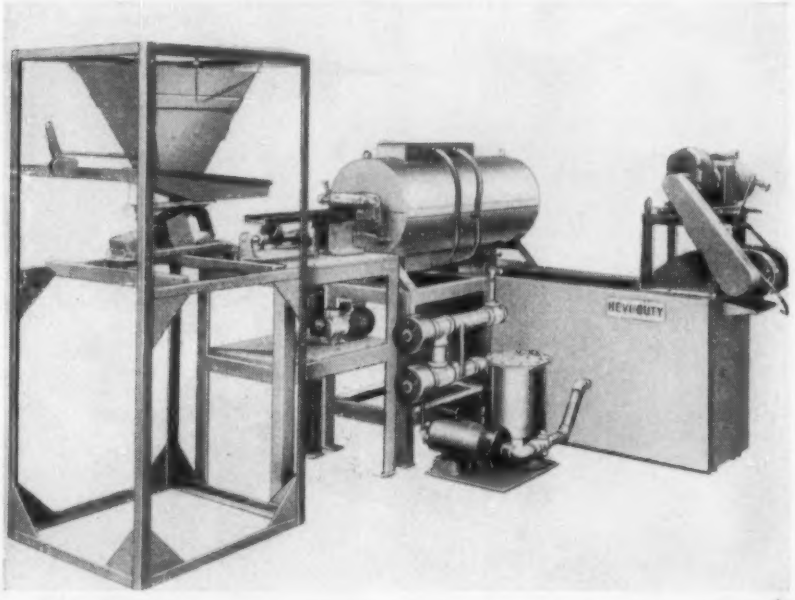
FLUX—*Special Chemicals Corps, 100 S Water St, Ossining, NY.* Kwikfluxer No. 54 for silver brazing and hard soldering available in applicator container made of plastic with screw tip; refillable.

BRAZING FLUX—*All-State Welding Alloys Co, 249 Ferris Ave, White Plains, NY.* No. 110 silver-brazing flux protects metals to 1800F; works with stainless, nickel, monel, brass, bronze, copper, steel.



FIN DESIGN — *The Trane Co, La Crosse, Wis.* To improve efficiency of extended heat transfer surface, being used on Trane heating and cooling coils.

ALUMINUM MELTING FURNACE—*Eclipse Fuel Engineering Co, 1002 Buchanan St, Rockford, Ill.* Double-chamber, dry-hearth. Units for gas, oil, or combination firing in 12 sizes.



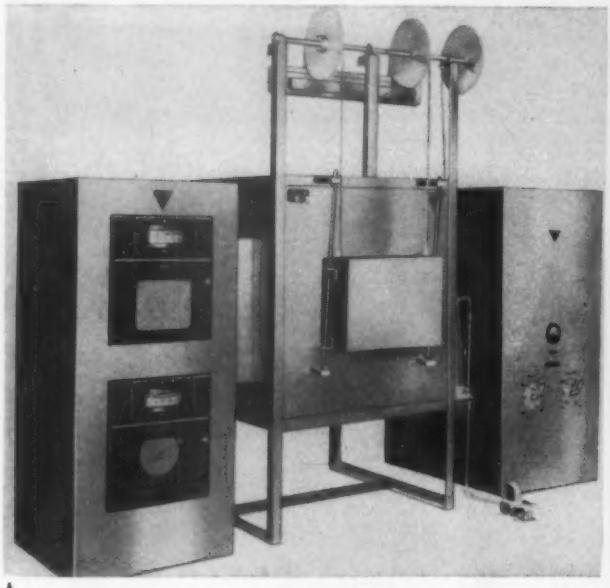
RADIANT-TUBE FURNACE — *Lindberg Engineering Co, 2450 W Hubbard St, Chicago 12.* Large-scale application of radiant tubes to toolroom-size furnaces with gas-fired radiant tube atmosphere furnace for heat-treating production and tool steels, except HSS, where it is essential to keep work decarburization-free. Max temp is 1850 F.

STRIP FURNACE — *Selas Corp of America, Erie Ave & D St, Philadelphia 34, Pa.* Direct-fired gas furnace softens brass strip from 0.004 in. thick upwards at speeds to 190 fpm. Strip travels vertically down through furnace between two refractory walls.

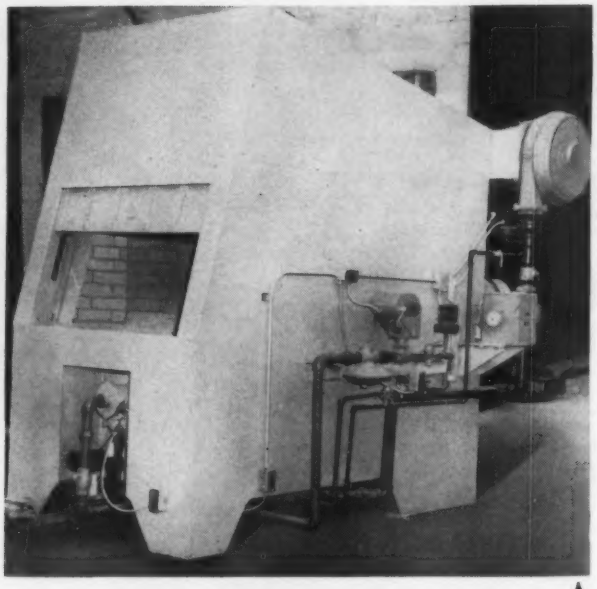
SHAKER HEARTH FURNACE—*Hevi Duty Electric Co, Milwaukee 1, Wis.* Automatic parts feeder; quench tank conveyor for removing treated parts; and Quench-O-Trol unit for maintaining exact temperature of the quenching oil. Temperatures to 1900 F.

BAKE OVEN—*Steiner-Ives Co, 229 Springfield Rd, Union, NJ.* Electric conveyor screen unit has built-in purging system to handle aluminized cathode ray tubes. Bakes 63 tubes per hr.

INFRARED LAMP—*General Electric, Nela Park, Cleveland.* For heating and baking, fused quartz tubular lamp is diameter of cigarette, produces 100 w of energy per lighted inch of length.

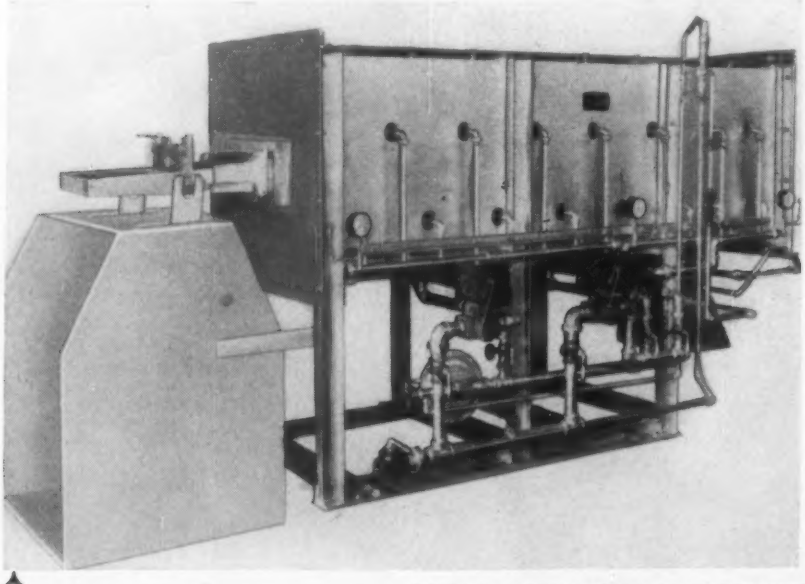


TEMPERATURE CONTROL—*Pereny Equipment Co, 893 Chambers Rd, Columbus 12, Ohio.* Indication, and permanent record, plus automatic time-temperature program control for heating and cooling. Max is 2700 F.



BRAZING FURNACE — *Harper Electric Furnace Corp, 39P River St, Buffalo 2, NY.* Automatic pusher model for bright brazing stainless steel at temperatures up to 2150 F. Sequence of operations is automatically timed.

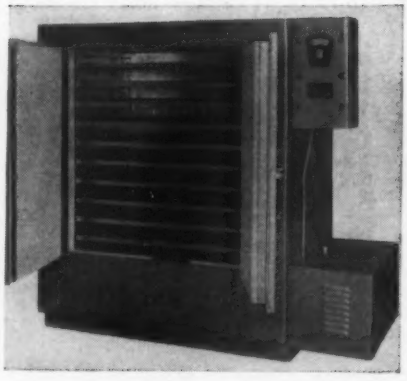
FORCED DRAW FURNACE—*Bellevue Industrial Furnace Co, 2620 Crane Ave, Detroit 14, Mich.* Recirculates hot gases through work chamber at 70 changes per min. Temp range is from 250 to 1250 F.



RECIPROCATING FURNACE—*American Gas Furnace Co, Elizabeth, NJ.* Model 230 for controlled-atmosphere heat-treating of stampings, screw machine parts, forgings. Work-conveying hearth reciprocates back and. forth Capacities to 600 lb per hr.

HEATER UNITS—*Haddam Mfg Co, Route 9, Haddam, Conn.* For instruments, aviation products, batteries, and process control. Operate at subzero temps, and at 400 F.

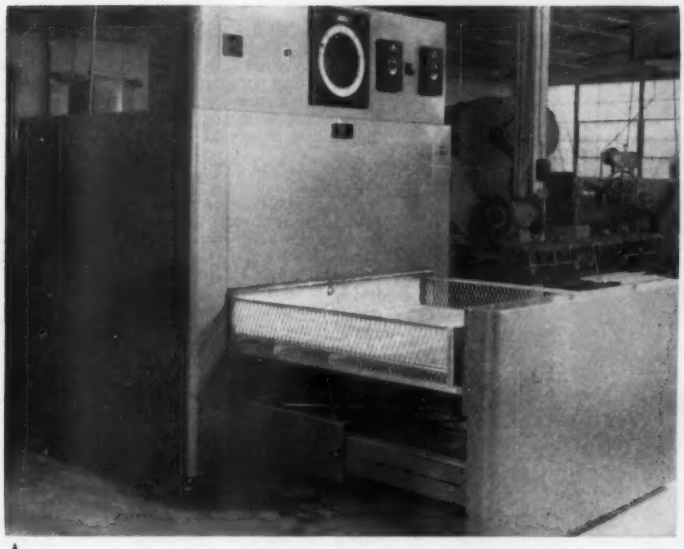
PILOT PROTECTION—*Partlow Corp, New Hartford, NY.* Series 700 Saf-T-Flame pilot for protection of gas-fired appliance against damage from failure of gas pilot or gas or electric supply.



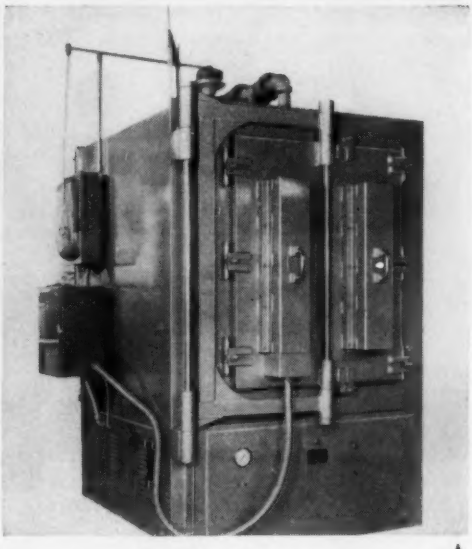
FURNACE — *K H Huppert Co, 6830 South Cottage Grove Ave, Chicago 37, Ill.* Temperature range is from 300 to 2000 F. It is controlled through Huppert Infitrol and electronic indicating temperature controller. The K-R series is built in five sizes.

GAS-FIRED FURNACE — *Leeds & Northrup Co, 444 N 16th St, Philadelphia 30, Pa.* Microcarb atmosphere control provides forced circulation, uniform atmosphere, and automatic control of both temperature and carbon potential.

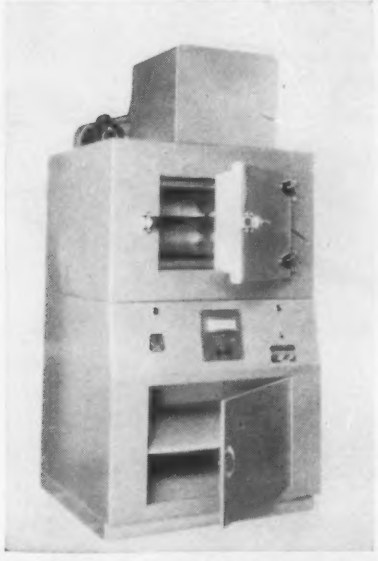
RECIRCULATING OVEN—*K H Huppert Co, 6830-32 Cottage Grove Ave, Chicago 37, Ill.* Max temperature of 650 F. Open elements are located in bottom, and air is recirculated by one or two stainless steel blowers.



DRAWER-TYPE OVEN—*Coates Electric Mfg Co, 3419 11th Ave SW, Seattle 4, Wash.* Preheats laminated phenolics prior to forming. Forced-convection design surrounds phenolics with uniform high-temperature air. Maximum temperature is 600 F.



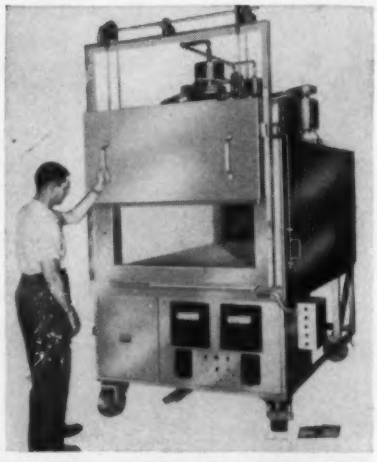
ELECTRIC VACUUM FURNACE—*K H Huppert Co, 6830 Cottage Grove Ave, Chicago 37, Ill.* Vacuum of 29 in. and temperatures to 2300 F can be obtained. Huppert-type Kanthal rod elements are used. Burning chamber is 27 x 37 x 38 in.



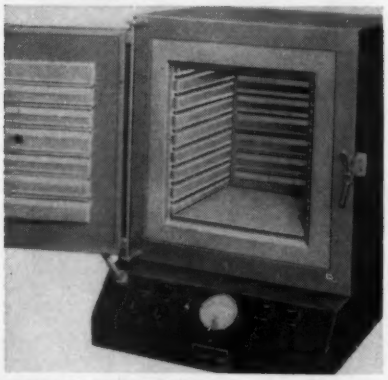
RECIRCULATING FURNACE — *K H Huppert Co, 6830-32 Cottage Grove Ave, Chicago 97, Ill.* Electric box recirculating furnaces for temp up to 1250 F are available in nine sizes and two heat ranges, 0-800 and 0-1250 F. Sizes are from 18 in. wide by 12 in. high by 18 in. deep to 24x24x36.

HSS HARDENING FURNACE — *The Sentry Co, Foxboro, Mass.* Redesign of Model Y; to improvements include close regulation of heat and operating range, rapid heating to desired temp. Silicon carbide resistors are located above and below one-piece silicon carbide muffle chamber.

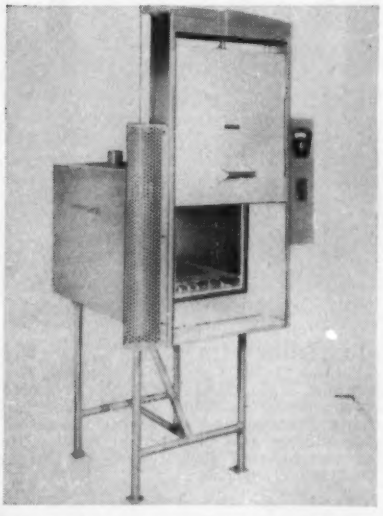
QUENCHING OIL—*Sinclair Refining Co, 600 Fifth Ave, New York.* Quenchol 500 series is said to have greater cooling power to insure higher, more uniform hardness and greater depth.



PORTABLE PROCESSING FURNACE—*Blue M Electric Co, 306 W 69th St, Chicago, Ill.* Furnaces are for experimentation, stress relieving, annealing of forgings, drawing, spinning, dimpling, stretching, and joggling of titanium sheets and castings, titanium forgings, and other alloys. Temperatures to 1750 F.



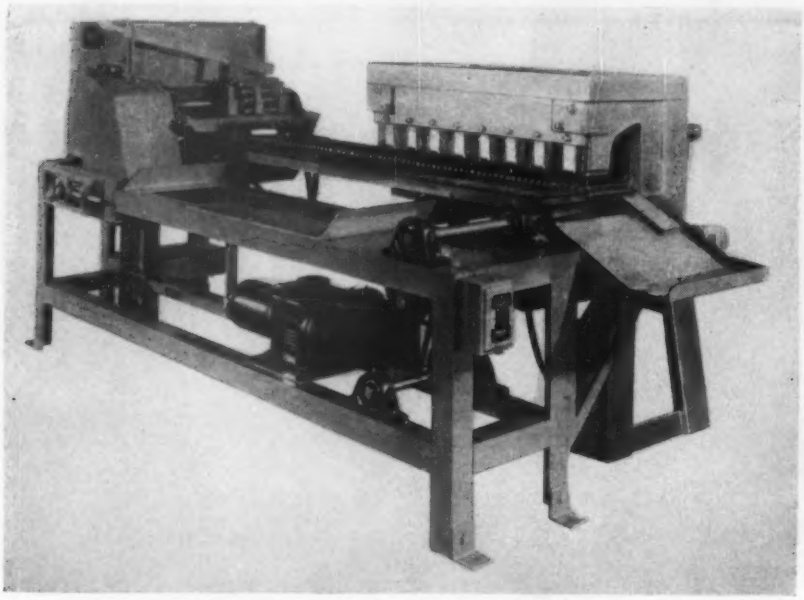
ELECTRIC FURNACE—*L and L Mfg Co, Chester 29, Pa.* Rated up to 2000 and 2300 F, will reportedly reproduce any time-temperature curve within ±3 F. Line consists of over 40 standard models offers infinite zone control by means of input controllers which control from 8 to 100% of input.



TREATING FURNACE — *Associated Metal Fabricators, 18-20 Sebago St, Clifton, NJ.* Electric oven has temp control within ±6 F, 6-in.-thick magnesium insulation. Inside dimensions are 15x15x26 in.

INDUCTION HEATER—*Lindberg Engineering Co, 2450 W Hubbard St, Chicago, Ill.* Model L1-5A-1 has 5-kw output, heavier sheet-steel cabinet to reduce RF radiation, and complies fully with FCC regulations. Maximum power use is 12.5 kva at 90% power factor.

INDUCTION HEATING — *Induction Heating Corp, 181 Wythe Ave, Brooklyn 11.* 25-kw generator is totally enclosed, with internal cooling system. Another product is an automatic vertical progressive hardening machine capable of hardening shafts 3 to 45 in. long, to 6-in. diameter. Hardening machine may be used with electronic generator from 5 to 50 kw, or with motor generators to 250 kw.

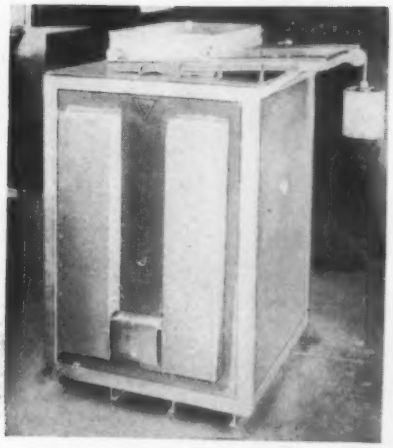


FURNACE FEEDER—*Gas Appliance Service, Inc, 1211 Webster Ave, Chicago 14.* Mechanical hopper feed unit at one end of furnace conveyor supplies bar stock before upsetting operation. Unit will supply Model 10D with ⅝-in. bar stock at 600 pieces per hr.

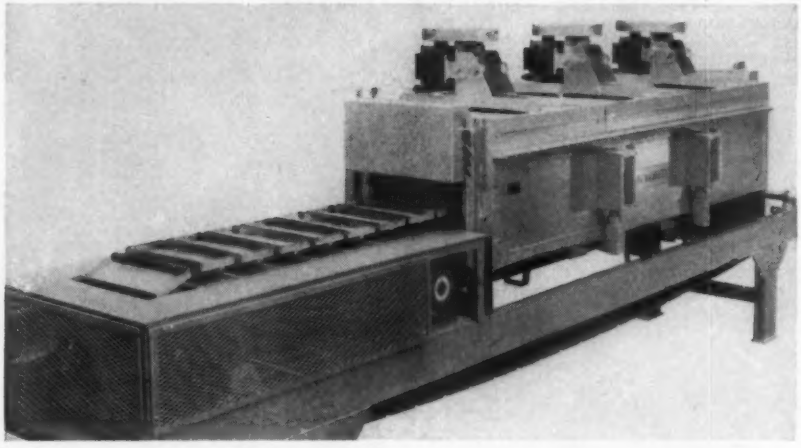
HEAT-TREATING PACKAGE UNIT—*Sunbeam Corp, 4433 W Ogden Ave, Chicago 23.* Gas carburizing, cyaniding, and atmosphere generation complete in one package unit. Pushbutton operation. Automatic removal of work from hot chamber to quench. Baffles diffuse heat in furnace.

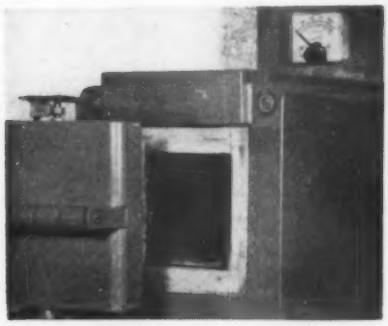
INDUCTION HEATING UNIT—*Lepel High Frequency Laboratories, Inc, 55th St and 37th Ave, Woodside, NY.* Tube-operated unit to bond individual strands of multi-strand wire and cable. Eliminates necessity of tin-dipping ends.

CONVEYOR FURNACE—*Hevi Duty Electric Co, Milwaukee 1, Wis.* Used to temper, anneal, stress relieve, or do other heating operations requiring temp of 1650 F. Variable speed drive mechanism adjusts conveyor speed.

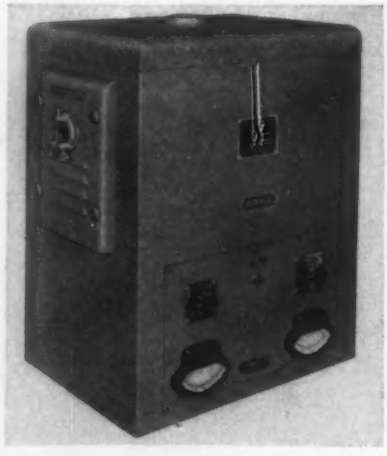


ELECTRIC FURNACE — *Pereny Equipment Co, 893 Chambers Rd, Columbus, Ohio.* Model PT-2550 provides close control to 2500 F. Lid over the firing chamber is ballbearing mounted, side-sliding and counterbalanced. Firing chamber of 18,900 cu in. measures 18x25x42 in. high.

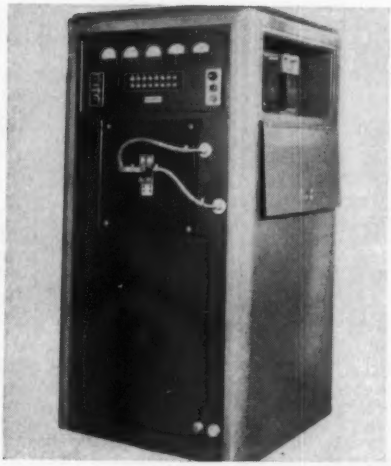




ELECTRIC FURNACES—*The Caljorn Co, 1168 Watson Ave, Whittier, Calif.* Operate at 2300 F intermittent and 2200 F continuous temperatures. For tool and die heat-treating, copper brazing of carbide tools, heating of small parts, hardening of HSS, annealing, drawing, and stress relieving.



ELECTRIC TUBE FURNACES—*Burrell Corp, 2223 Fifth Ave, Pittsburgh 19.* One, two, and four tubes; recommended for high temperature combustion in determinations of carbons or sulfurs in ferrous and nonferrous materials.

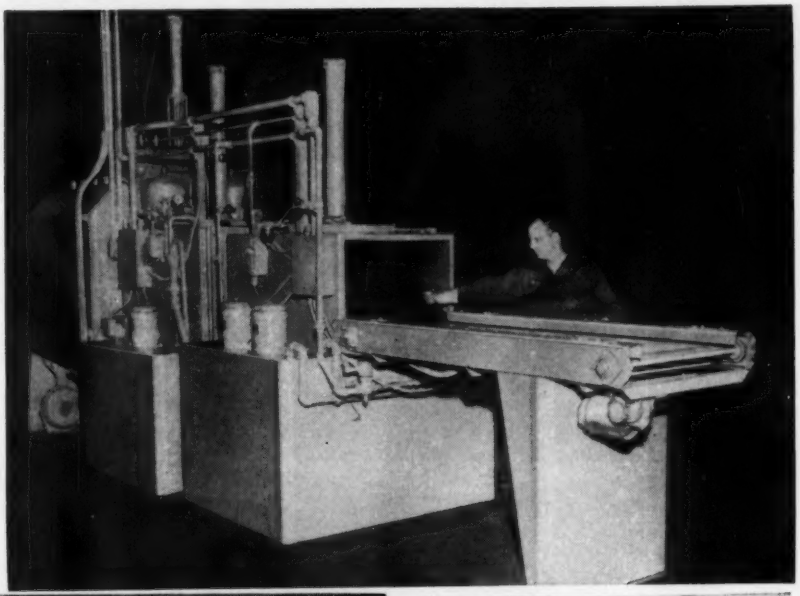


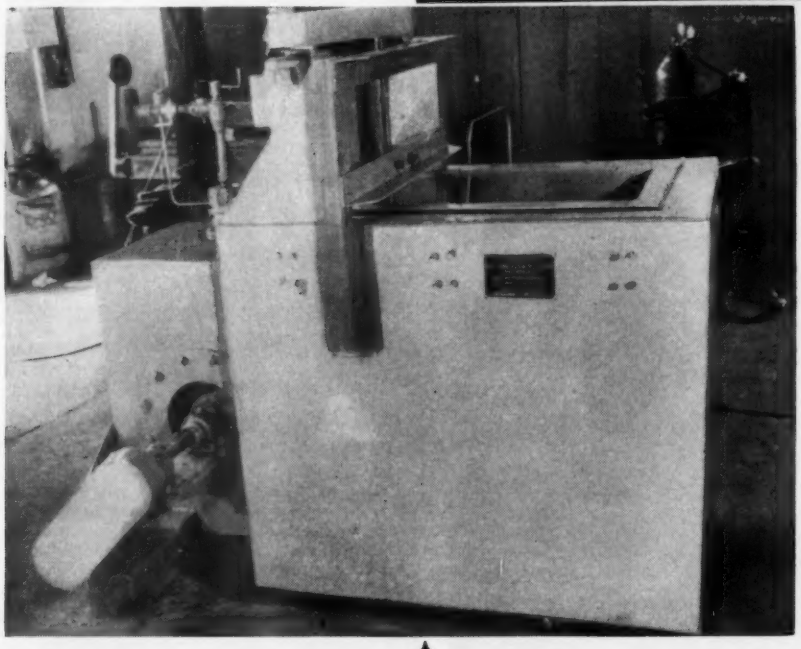
CONTROL, HEATING STATION—*Lindberg Engineering Co, High Frequency Div, 2444 W Hubbard St, Chicago 12, Ill.* Set for forging, brazing, hardening or annealing operations where deep penetration is desired. Power inputs range from 50 to 1250 kw.

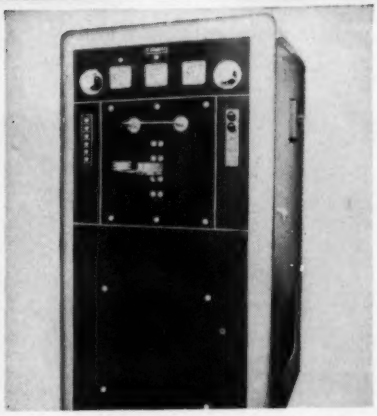
BRINE QUENCH UNIT—*Ipsen Industries, Inc, 715 S Main St, Rockford, Ill.* For use with Ipsen series T metal-treating furnaces. Load capacities are 300, 400 or 700 lb. Provides automatic transfer of work from adjoining heat-treating furnace through own brine quench. Solution temperatures, work handling, and solution circulation are controlled automatically.

GAS GENERATOR—*Ipsen Industries, Inc, 715 S Main St, Rockford, Ill.* G-1250-G for controlled-atmosphere furnaces, produces 1250 cfh. Atmospheric air and raw gas are drawn through flow meters and pumped into catalytic cracking retort heated with multiple jet burners. When cracked, gases are cooled by water-jacketed heat exchanger.

TANK HEATER—*Westinghouse Electric Corp, 401 Liberty Ave, Box 2278, Pittsburgh 30.* Watertight Gripper terminals provide quick connection. Exposed parts made of copper. Ratings 600 to 5000 w. Tube loop lengths from 6 to 15 in.







INDUCTION HEATING UNIT—*Lindberg Engineering Co, 2450 West Hubbard Street, Chicago, Ill.* Model LI-5-A-1, is single-station model designed for the continuous output of 5kw at frequency of 450 kc. Water consumption is 2 to 3 gpm at max inlet temp of 86 F.

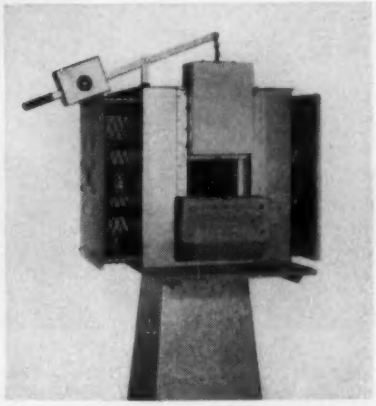
CASE HARDENING—*Cogmatic Co, Milwaukee.* Flame preheating, flame cutting, and quenching automatically produces gears and sprockets with teeth. Case depths to 3/16 in.

QUENCHING UNIT—*Industrial Heating Co, 3570 Fremont Pl, Detroit 7, Mich.* Range of 300 to 800 F by hot air circulated around all pot surfaces. Hot salt or oil in pot are agitated by propellor and ductwork.

CONTROLLED ATMOSPHERE INSTRUMENT — *Ipsen Industries, Inc, Rockford, Ill.* Carbotronik provides accurate, continuous method of automatically controlling carbon potential of endothermic furnace atmospheres. Handles wide variety ranging from 0.20 to 1.25% carbon.

REFRIGERANT — *E I du Pont de Nemours & Co, Wilmington, Del.* Freon-13 non-flammable and non-explosive, for temperatures of —70 F to —150 F.

COLD-TREATING—*Conrad, Inc, Holland, Mich.* Units handle steel to temp of –120 F. Treatment gives positive set to steel.



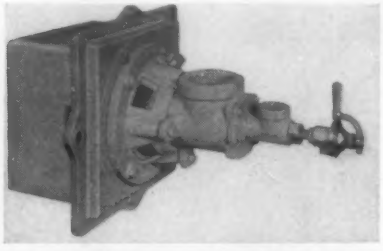
HSS HARDENING UNIT—*The Sentry Co, Foxboro, Mass.* Redesign of Model Y; mounting has been changed to heavy welded plate; improvements in insulation have been made. Unit is heated by silicon carbide rod resistors located above and below the one-piece silicon carbide muffle chamber.

ROLLING QUENCH PRESS—*Gleason Wks, Rochester 3, NY.* Rollers rotate round parts under variable pressure as oil is pumped over them. Fluid flow to 350 gpm; parts with dia from 9/16 to 4 in., and lengths from 6 to 43 in. can be handled.

PLATE HEAT EXCHANGER—*The de Laval Separator Co, Poughkeepsie, NY.* Corrugated plates pressed from heavy stainless steel stock withstand high operating pressures, are invertible so exchanger may be altered. Inlet and outlet ports can be varied.

HEAT-TREATING—*W S Rockwell Co, 200 Eliot St, Fairfield, Conn.* Furnace is single-end, car-type for 50,000-lb load, range of 1275 to 2200F, with natural-gas burners, insulated 1600F fan.

CHILLING MACHINE — *Cincinnati Sub Zero-Products Co, 3932 Reading Rd, Cincinnati 29, Ohio.* Weighs 500 lb, is 20x18x43 in. Capacity of chamber, 1 cu ft; temp range from —70 to —120F. Range from +250 to —120F can be obtained with addition of heater.



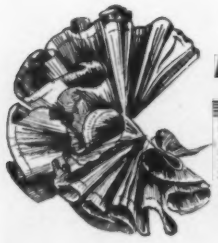
FUEL BURNER—For use on forge furnaces, and also to find application on melting pots, driers, and kilns. They may be operated on heavy oil, light oil or gas.

CONTROLLED - ATMOSPHERE — *Waltz Furnace Co, Dept 1, Symmes St, Cincinnati, Ohio.* Furnace double chamber is 12x12x20 with quench tank and atmosphere generator to fit. Gages for proportioning the gas and air are at side; gas curtain and piloted outlet are provided.

COLD-TREATING CHAMBERS—*Tenney Engrg, Inc, 26 Ave B, Newark 5, NJ.* Produce temps to –170 F. Available with 1, 4, 6, 9, or 12-cu-ft work spaces.

PLASTIC-MELTING TANK — *Evens-Thompson Mfg Co, 11360 Kaltz Ave, Box 181, Center Line, Mich.* Allcast-aluminum melting unit with inward-pitch self-draining top melts plastic faster. Dipping capacity is 3.6 gal.

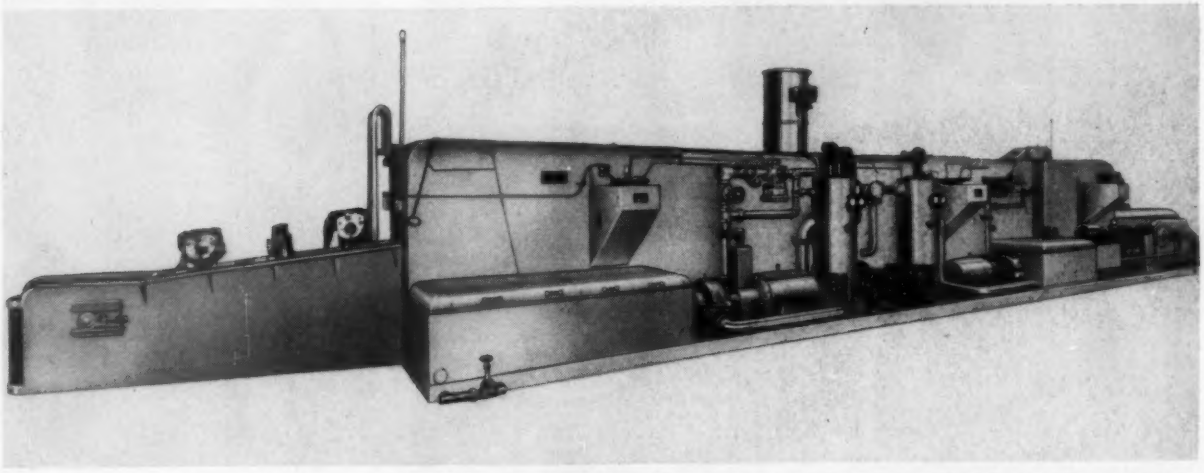
ELECTRIC RADIANT ELEMENT — *Cleveland Process Co, 965 East 57th St, Cleveland 3, Ohio.* For baking, curing, drying, plasticizing, and other heat processing where temperatures of 400 to 500 F are required. On applications such as heat treating and carburizing, where higher temperatures are required, heaters with ratings up to 1600 F can be supplied.



American Machinist
1955
PRODUCTION PREVIEW

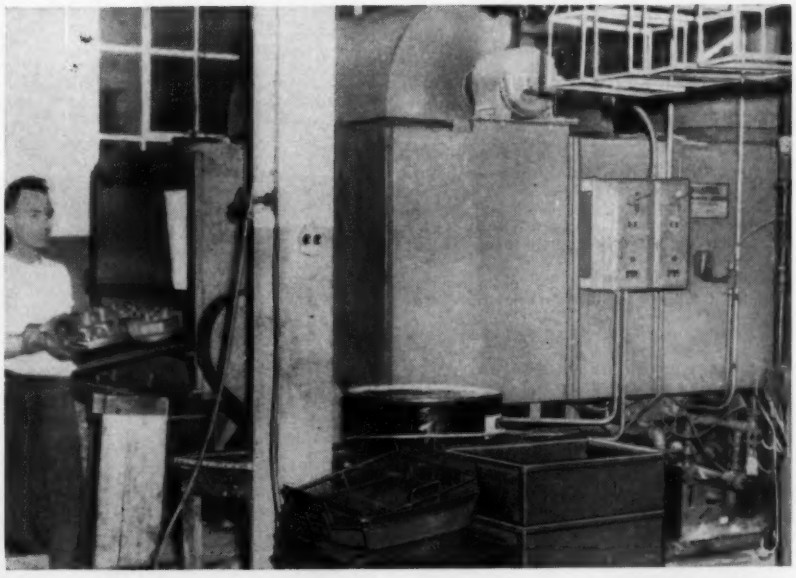
CLEANING AND FINISHING

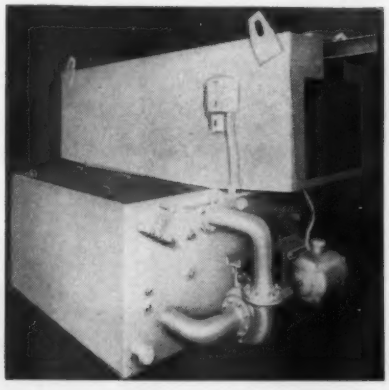
summarized from descriptions published during 1954



AUTOMATIC INDEXING WASHER —*International Conveyor & Washer Corp, 652 E Fort St, Detroit 26.* Three-stage unit can handle 400 automatic-transmission castings per hour. Pinpoint action is achieved by locating high-pressure nozzles precisely.

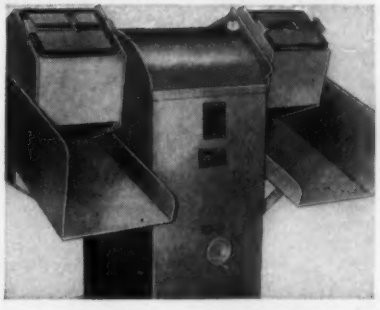
WASHING MACHINE — *Industrial Washing Machine Corp, Matawan, NJ.* Cuno filter parts cleaned and degreased. They are placed on a chain-type conveyor belt and first degreased by washing in Oakite solution at 170 F, followed by submersion in hot water rinse. Machine is 32 ft long, 8 ft 3 in. wide, and 8 ft 11 in. high, with a capacity of 1000 sq ft of metal per hour.





SPRAY WASHER—*Detrex Corp, Detroit 32.* Series 30 Monorail can be used as single unit or combined into multiple-stage washer. Each unit takes work to 30 in. wide; tanks hold 600 to 1000 gal.

PHOSPHORIC ACID CLEANERS—*Detrex Corporation, Detroit 32, Mich.* For parts too large for normal production cleaning methods, or for plants which don't need elaborate equipment for phosphate cleaning.

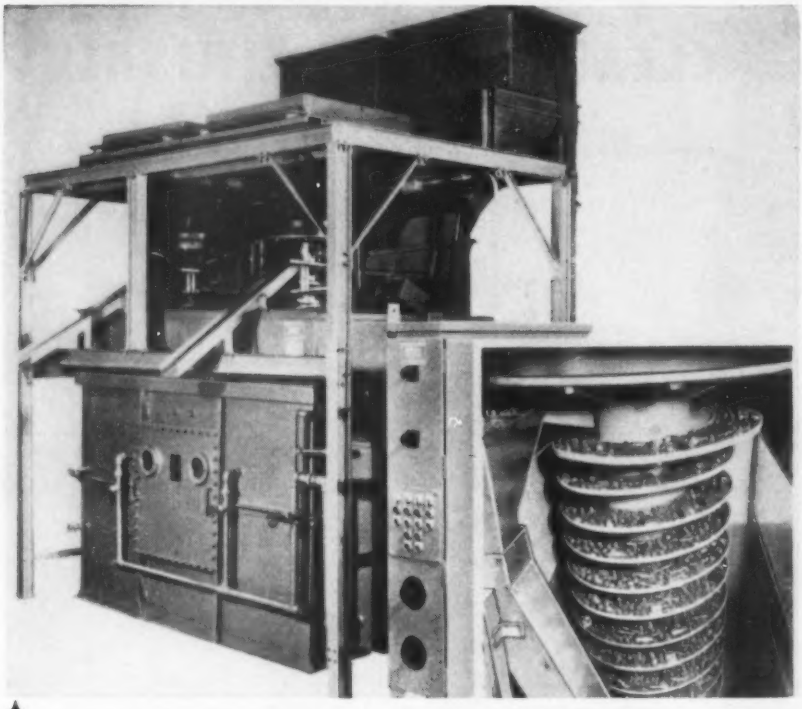


METAL CLEANER—*Detrex Corp, Detroit 32.* Pre-phosphating, for use in mechanical spray processing equipment, contains no metallic activator. Detrex 771 Paintbond.

ALKALINE CLEANER—*Detrex Corp, Detroit 32.* For use in mechanical spray washers prior to phosphate coating; said to be entirely free of caustic soda, makes crystalline structure of the coating finer and more effective.

ULTRASONIC GENERATOR—*Branson Instruments, Inc, 430 Fairfield Ave, Stamford, Conn.* Model 500 functions by activation of solvents in which low-voltage focused ceramic transducer is immersed.

TWIN FINISHER—*Rampe Mfg Co, 3320 St Clair Ave, Cleveland 14, Ohio.* Movable chutes can be tilted to rear to drain off liquids and forward to deliver load. Twin barrels have load capacity of 1.1 cu ft each.



DEGREASER — *Manufacturers Processing Co, 1360 Hilton Rd, Detroit 20, Mich.* Vibratory degreaser is loaded from hopper with parts automatically fed at constant rate, using vibratory motion of spiral elevator.

SAFETY SOLVENT—*Turco Products 6135 S Central Ave, Los Angeles 1, Calif.* For cleaning electrical equipment where high-flash material is required. Can be used on production lines and in whirl parts washers.

VAPOR DEGREASERS — *Baron Industries, 241 West Avenue 26, Los Angeles 31, Calif.* "Super", heavy-duty; cleaning is accomplished automatically in trichlorenthylene vapors. Barrels have work area 23 in. in dia; vapor depth of 18 in.

EMULSION CLEANERS—*Turco Products, Inc, 6135 S Central Ave, Los Angeles 1, Calif.* Spray-on cleaning of grease and oils. To be added in small amounts to petroleum solvents.

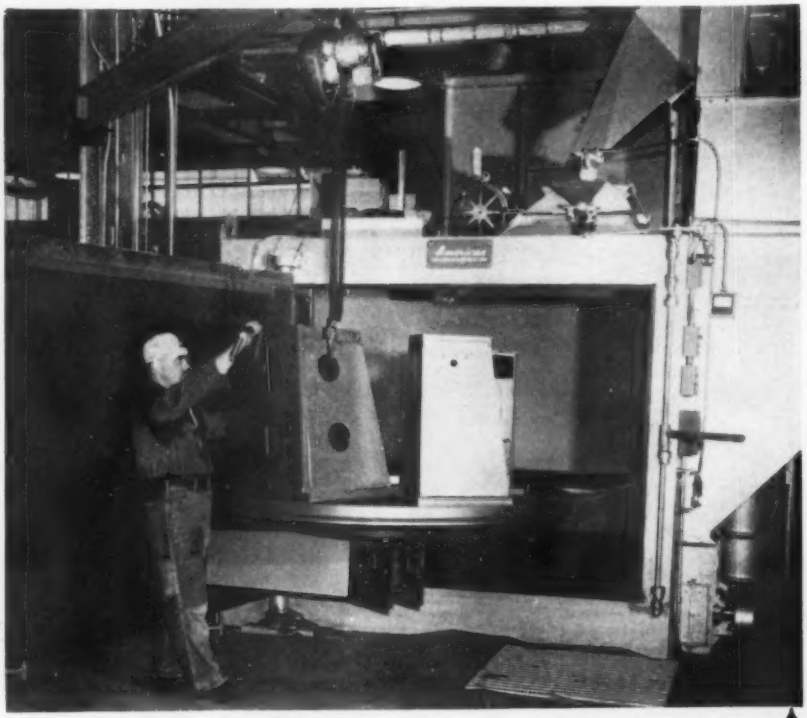
METAL CLEANING—*Graymills Corp, 3705 North Lincoln Ave, Chicago 13, Ill.* Two units applicable for flushing hydraulic, pneumatic parts, bearings, castings, and assemblies. Model TR-81 is a self-cleaning filter which insures clean solvent for rinsing parts.

ALUMINUM CLEANER — *Northwest Chemical Co, 9310 Roselawn, Detroit 4.* Acid Solvent Emulsion No. 1 removes soil from fabricated parts prior to any type of final finishing.

STEAM JENNY — *Homestead Valve Mfg Co, Coraopolis, Pa.* Series 300 Hypressure Jenny has oil-fired burner and single heating coil, will supply up to four cleaning guns. Delivers 800 gph within 3 min from cold start. Electric motor or gasoline engine driven.

BATCH CLEANING MACHINE—*Magnus Chemical Co, Inc, Dept AM, Garwood, NJ.* Magnus AJA LIF fully automatic multi-stage unit consists of series of independent, self-contained dipping units serviced by automatic conveyor system. Can be installed in existing production line.

CLEANING CONCENTRATE—*Ipsen Industries Inc, 715 S Main St, Rockford, Ill.* Non-corrosive; for effective removal of oils, grease, lubricants, soils, lapping and drawing compounds. For both batch and spray-type washer.



RINSE TANK—*Vapor Blast Mfg Co, Dept RT, 3025 W Atkinson Ave, Milwaukee.* Welded steel, two-compartment; for cleaning parts after vapor blasting—one compartment for hot solution with thermostatic control, other for cold solution.

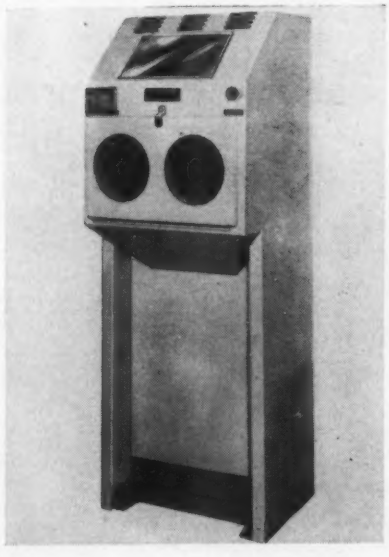
BLASTING CLEANER — *American Wheelabrator & Equipment Corp, Mishawaka, Ind.* Table-type airless blasting machine—the 72-in. Wheelabrator Swing Table—needs no pit for abrasive hopper, being built for floor-level installation.

AUTOMATIC PARTS WASHER—*D C Cooper Co, 1467 S Michigan Ave, Chicago 5, Ill.* Each of three compartments is complete tank with separate controls, and equipped with rack for spare parts. Rack is lowered to bottom of tank and automatically agitates parts in solution. A second switch stops agitation and rack rises flush with top of tank.

DETERGENT CLEANER — *E F Houghton & Co, 303 W Lehigh Ave, Philadelphia 33, Penna.* Houghto-Clean 402-403 is alkaline cleaner for removal of ordinary shop soils with minimum of agitation of work. Detergent and wetting agent is non-volatile, and non-inflammable.

BLAST CLEANING—*Pangborn Corp, Hagerstown, Md.* Cleaning barrel, with 1½-cu-ft capacity features: rubber conveyor belt, conveyor drive with automatic torque throw-out arm protection, anti-friction roller bearings, and conveyor take-up. Hydro-Finish liquid blast machine—cabinet model with accessory track and loading car with bearing-mounted turn-table.

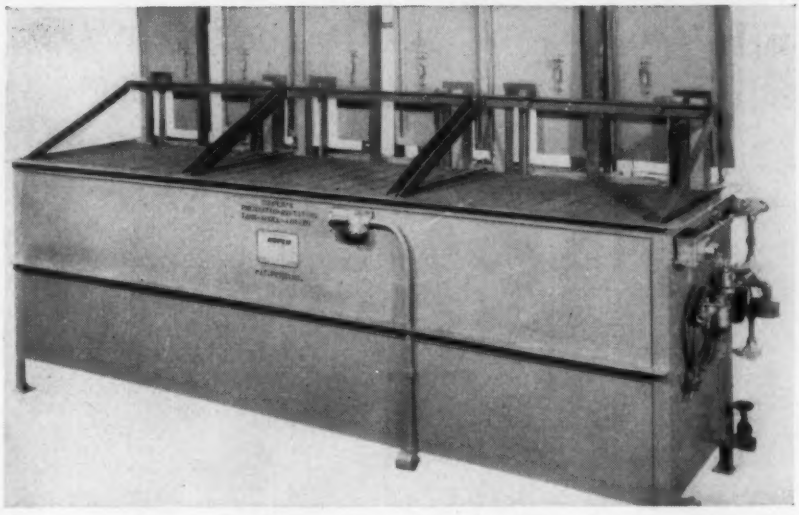
SHEET BLASTING MACHINE—*Pangborn Corp, Hagerstown, Md.* ES-503 Rotoblast cleans steel sheet and plate up to 54 in. in width at rate of 20 to 80 lineal fpm. Two wheels throw 160,000 lb of abrasive per hour.



WET-BLAST UNIT—*The Cro-Plate Co, 747 Windsor Street, Hartford 5, Conn.* May be operated in conjunction with 3-hp compressor. Motor-driven paddle-design agitator for water and abrasive mix; self-supporting trigger gun.

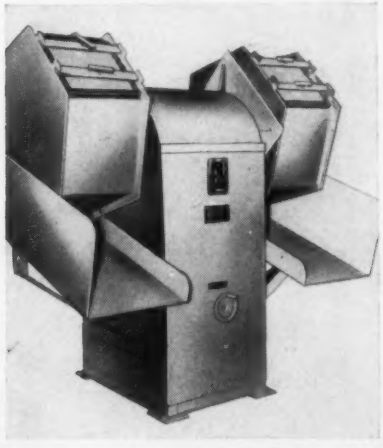
WET BLAST MACHINE—*Wet Blast Mfg Co, 3230 E Woodbridge, Detroit 28.* Model 34 polishes surfaces when tolerances are no more than 0.0001 in. Has vertical pump with chrome-plated impeller and shaft.

DEGREASING SOLVENT — *Octagon Process, Inc, 15 Bank St, Staten Island 1, NY.* Klearall 95 removes light oils from metal parts, is said to save as much as 50% of cost of vapor degreasing.



EMULSION CLEANER—*Brulin & Co, Inc, Dept 287, 2939 Columbia Ave, Indianapolis 7, Ind.* For cleaning oil, grease, and dirt from metal surfaces. When mixed with low-cost solvents such as kerosene, concentrate steps up cleaning action of solvent; non-toxic and non-corrosive.

BLAST MACHINES — *Storm-Vulcan, Inc, 2225 Burbank, Dallas, Texas.* Parts cleaning machines from 20-gal. solution capacity to 2300 gal. for applications in cleaning, degreasing, and stripping. All models are equipped with impellers which create a violent, fast-cleaning scrubbing action.



TWIN-BARREL FINISHER—*Rampe Mfg Co, 3320 St Clair Ave, Cleveland 14.* Super Model with 4-cu-ft capacity has variable speed drive from 12 to 36 rpm. Movable chutes can be tilted to rear to drain off liquid and front to discharge load.

CLEANING PROCESS—*The Neilson Chemical Co, 6564 Benson St, Detroit.* Phosteem phosphatizes metal surfaces prior to painting; said to require minimum plant space; can be used in any convenient available section.

HYDRO-STEAM CLEANER — *Vapor Heating Corp, 6420 Howard St, Chicago 31, Ill.* 4989-G jets 1200 gal of hot water an hour at 240-lb pressure. Automatic 40-hp generator develops 120-lb and over 1100 pounds of steam per hour.

TURBO-BLAST MACHINES—*Storm-Vulcan, Inc, 2225 Burbank, Dallas, Texas.* Models range from 20-gal. solution capacity to 2300-gal. for cleaning, degreasing, and stripping. Impellers create fast-cleaning scrubbing action.

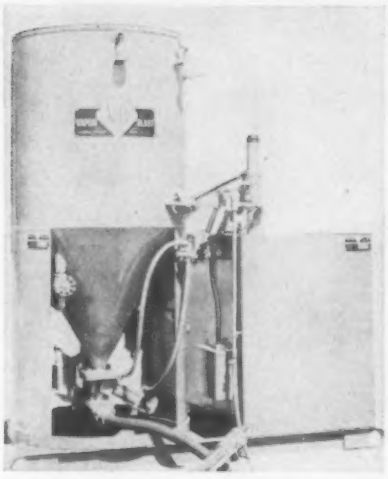
METAL CLEANER—*Oakite Products, Inc, 124 Rector St, New York 6.* Composition 161 is alkaline cleaner for aluminum, steel and other metals in spray washers. Non-foaming. Recommended concentration ½ to 2 oz per gal. at 160 to 185 F.

WASHING SOLUTION—*Oakite Products, Inc, 124 Rector St, New York 6, NY.* CrysCoat SW, zinc-phosphate coating material for iron and steel, designed for pressure-spray washing equipment.

CLEANER — *Oakite Products, 124 Rector St, New York 6.* No. 191 for electrocleaning copper and its alloys prior to plating. Reduces tarnishing in higher-temp cleaning ranges.

CLEANING COMPOUND — *Oakite Products, Inc, 124 Rector St, New York 6, NY.* Composition No. 93 for steam-generating equipment and steam guns. Meets GSA standard P S 00751.

JET STEAM SPRAYER—*Henry Flow Control Co, Melrose Park, Ill.* For cleaning of motors, compressors, condensers, machinery, engines, small parts, without dismantling.



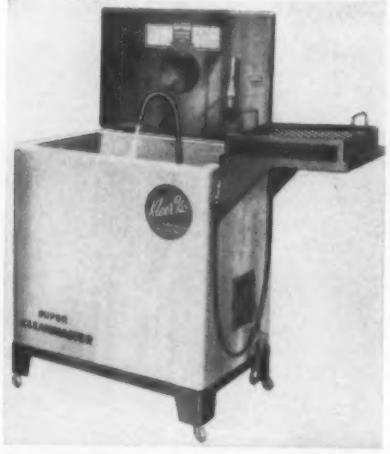
VAPOR BLAST—*Vapor Blast Mfg Co, 3025 West Atkinson Ave, Milwaukee 15, Wis.* Portable wet or dry sandblasting unit, Model B-10-A, is for rust removal, general cleaning, and surface preparation.

PARTS-CLEANING MACHINE — *The Cincinnati Cleaning and Finishing Machinery Co, Sharonville, Ohio.* Agitates a tray, holding the parts, through cleaning bath. Tray sinks into tank where it is agitated at rate of 40 spm. Pneumatic mechanism operates at 100 psi.

FINGERPRINT REMOVER — *R M Hollingshead Corp, 844 Cooper St, Camden, NJ.* 240 F flash point. Developed to answer need for higher-flash-point fingerprint removing chemical.

CONTACT CLEANER — *General Cement Manufacturing Co, 919 Taylor Ave, Rockford, Ill.* And lubricant; to reduce noise while cleaning electrical relays.

SOAK TANK CLEANERS—*Van Straaten Chemical Co, 82 W Washington St, Chicago 2.* Vantrol 5617-A and Vantrol 5617-B remove heavy, oily soils, also marking inks that have penetrated porous oxidized aluminum surfaces.



DEGREASER—*Kleer-Flo Co, Dept H, 250 W 57th St, New York 19.* Model 50 Super Cleanmaster combines chemical compounds and compressed-air agitation to remove dirt, oil, grease, chips from metal parts in soaking tank.

SAND-BLASTING MACHINE — *Leiman Bros, Inc, 146 Christie St, Newark 5, NJ.* Extra-large viewing; enclosed cabinet design; movable nozzle suspended from top of cabinet. Three sizes: 18x24 in., 30x36 in., and 24x60 in.

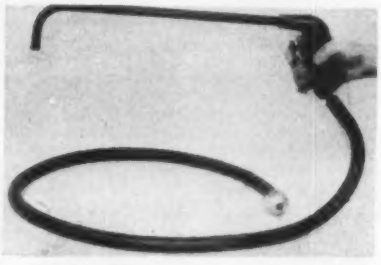
BALL BEARING WASHING — *Equipment Div, Magnus Chemical Co, Dept AM, Garwood, NJ.* Cabinet, spray system, pumps, solution tank, rotating cones, and filtering system. Model RT has capacity of 500 bearings per day.

DEGREASER — *Circo Equipment Co, 20 Central Ave, Clark Township, Rahway, NJ.* Recessed condensing coils keep sidewalls clear. Water condensing on coils drops into condensate pan, then into water separator. Water-temperature regulator is between cooling coil and jacket, and maintains jacket inlet temperature between 90 and 120 F. Pump is corrosion-resistant and completely sealed, except at inlet and outlet.

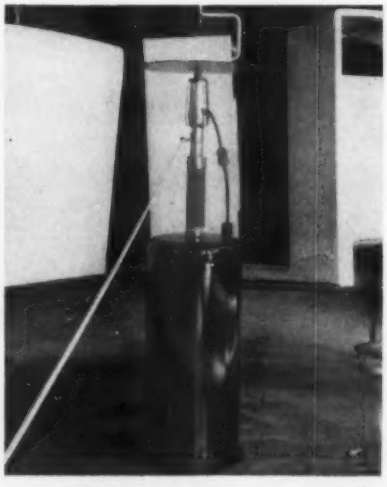
CLEANING MACHINE—*The Alvey-Ferguson Co, 1162 Disney St, Cincinnati 9, Ohio.* Uses low-flash petroleum solvents; designed for bearing manufacturer.

IMPREGNATING SYSTEM — *American Metaseal Mfg Corp, West New York, NJ.* Packaged system for impregnation of porous metals includes impregnating tank, cleaning and rinse tanks, reservoir, vacuum pump, vapor trap, valves, gages, and pipes.

SPEED LATHE—*Schauer Mfg Co, 4550 Alpine Ave, Cincinnati 36.* Vertical-spindle, vacuum-fixture machine is 35 in. high, runs from 100 to 4800 rpm; features twin-disk clutch.

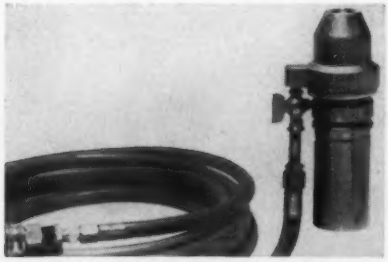


SPRAY NOZZLE—*Jas A Murphy & Co, Inc, 1421 High St, Hamilton, Ohio.* Nozzles are available from 2½ in. to 5 ft long and produce fine spray for spraying permanent molds, blackening molds, or cleaning generators and machines. Weight varies from 1½ to 2¾ lb.

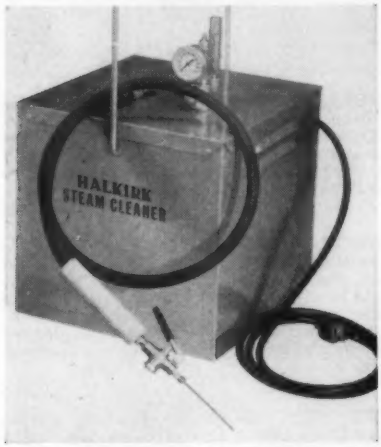


RECIPROCATING DISK ATOMIZER —*Ransburg Electro-Coating Corp, Indianapolis, Ind.* For use with Ransburg No. 2 process of electrostatic spray painting. Single 25-inch disk is capable of atomizing five times as much paint as one atomizing bell of Ransburg triple head unit. Different reciprocating speeds may be automatically controlled within stroke.

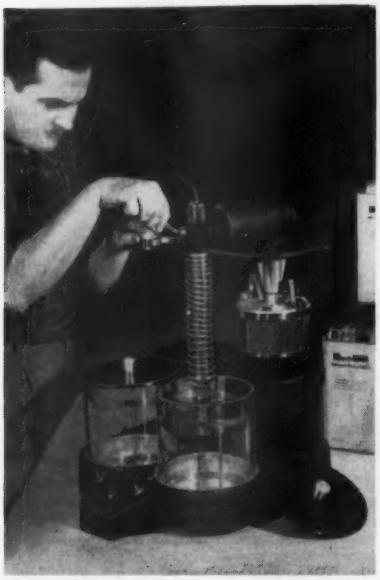
POWER BRUSHING MACHINE—*The Osborn Manufacturing Co, 5401 Hamilton Ave, Cleveland, Ohio.* Brushamatic 4-L3 removes burrs and blends surface junctions on metallic or non-metallic parts up to 100 lb in weight. Simple operator job is to place part on work-holding fixture. Workhead can be rotated 180° in horizontal and vertical plane.



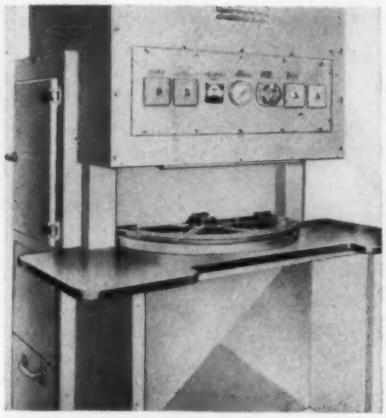
NOZZLE HEAD—*Sanstorm Mfg Co, Santa Clara and H Sts, Fresno, Calif.* WH-2 mixes water, sand, and air-pressure prior to being forcibly discharged. Water is injected by venturi action into dry-abrasive stream.



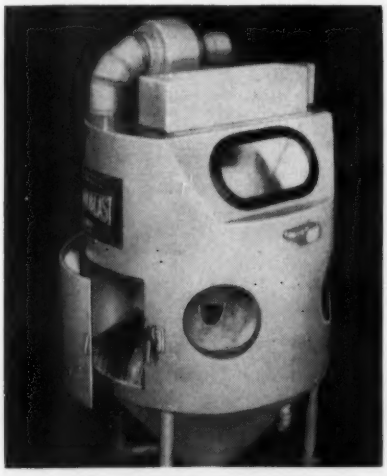
PORTABLE STEAM CLEANER—*Halkirk Co, 200½ Strand, Manhattan Beach, Calif.* Cleans, degreases, removes contamination without disassembly, from otherwise inaccessible parts. Electrically heated on standard circuit, thermostatically controlled.



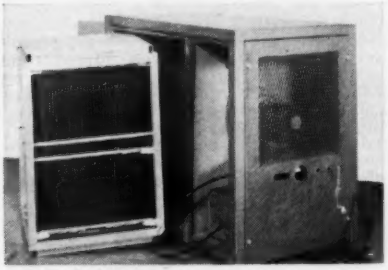
DRYING CHAMBER—*L & R Mfg Co, 577 Elm St, Arlington, NJ.* Incorporates thermostat and specially tempered glass jars. Thermostat cuts off current to heating unit if fan motor stops functioning. Machine is 23x16½x 17¼ in. and Monel-mesh work basket, 5½-in. ID and 3⅛ in. deep, accommodates triple nesting baskets for segregation of small parts.



AUTOMATIC WET-BLASTER — *The Cro-Plate Co, Inc, 747 Windsor St, Hartford, Conn.* Cabinet area is divided into three chambers: blast chamber where fixed position guns finish work in part or entirely; rinse chamber where abrasive slurry is rinsed from work; air-dry chamber. Simple accessible panel contains all necessary controls for operation.



BLAST CLEANER—*R W Renton & Co, Cleveland 3.* Jet Blast is 43 in. high, 24 in. in dia, has one or two air-blast guns for 28 or 42 cfm at 85-100 psi. Two gal. liquid, 13 lb abrasive.



SPACE CLEANER—*The Baker Co, Maplewood, Maine.* Uses 1000-cfm capacity electrostatic air cleaner. Propeller fan drives air through unit horizontally from one end to other. Is 33 in. long, 32 in. high, and 21 in. wide.

FINISHING COMPOUNDS—*Tumb-L-Matic, Inc, 4510 Bullard Ave, New York 70.* Dry-tumble Tumb-L-Grayn, said to produce unusually high luster finish on small metal parts.

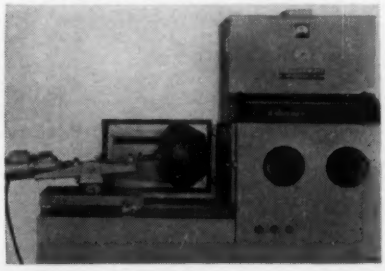
CLEANER — *Klem Chemicals, Inc, Dearborn, Mich.* K-A-T alkaline and emulsion removes soil from metals at room temperature; is claimed to have corrosion-inhibiting properties.

CLEANER GUN—*Kelite Products, Inc, 1250 North Main St, Los Angeles 12, Calif.* No. 4 for Spray White cleaner, equipped with two jets, spray, and needle.

CONTROL INSTRUMENT—*The DuBois Co, 1120-40 W Front St, Cincinnati 3, Ohio.* Indicates whether right amount of metal washing compound is used in washing operation.

OIL RECOVERY UNITS — *Detroit Harvester Co, Pioneer Pump Div, 14300 Tireman, Detroit 28, Mich.* Automatic units provide steady separation of oil from washing solution of parts washers, resulting in reduced expenditures for coolants and washing compounds.

SUMP TANK CLEANING UNIT — *W R Carnes Co, South Main St, Verona, Wis.* Portable machine cleans, chips, abrasives, sludge, old oil, and coolant from sump tanks of grinders, lathes, and other machine tools at rate of 20 gpm with average weight oils. Series NS is made in tank capacities of 100 to 150 gal.



PRESSURE BLAST BARREL — *The Cro-Plate Co, Inc, 747 Windsor St, Hartford 5, Conn.* For high-production finishing, cleaning, or deburring of small parts. Work is loaded into expanded-metal, plastisoled barrel; blast gun, in adjustable position, aims in open end. Variable-speed drive is rated at 0 to 78 rpm. Two blast circuits are available, suction principle, or pressure-tank system.

ABRASIVE CLOTH—*Crown Abrasive Co, Inc, 1841 Broadway, New York 23, NY.* Oilproof silk gives high polish. 400-grit abrasive, "Auto" cloth.

CLEANING and FINISHING

LUBRICANT CLEANER — *Zel-Tex Chemical Co, Suite 307, 425 Bush St, San Francisco.* Technilube removes rust without harming metal, cleans surfaces and provides permanent lubrication.

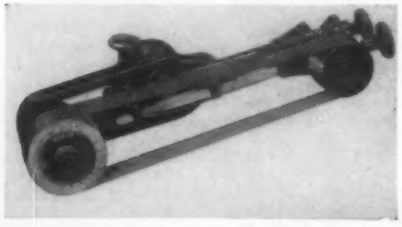
ALUMINUM CLEANER — *Enthone, Inc, 442 Elm St, New Haven, Conn.* NE-6 is stated to be mild in alkalinity, does not etch metals either at air interface or in contact with other metals.

DEADMAN VALVE—*Clementina, Ltd, 2277 Jerrold Ave, San Francisco, Calif.* For sandblast machines; provides instant control of blasting at nozzle head.

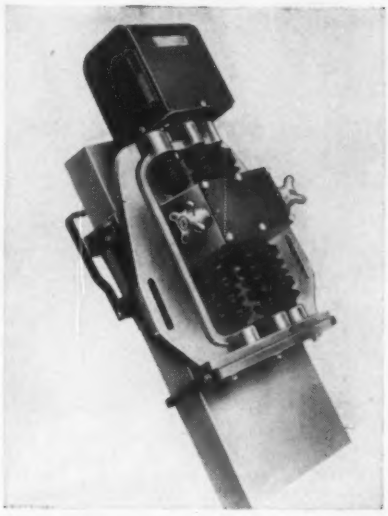
BARREL FINISHING COMPOUND—*Minnesota Mining and Mfg Co, 900 Fauquier St, St Paul 6, Minn.* For burnishing operations where three or four conventional compounds were previously required. Can be used with all types of barrel finishing media.

POLISHING STAND—*Crane Packing Co, Dept AMN, 1800 Belle Plaine Ave, Chicago.* With this portable stand a complete 50-yd roll of 12-in.-wide optical polishing paper can be attached and held flat. Clamping arrangement holds a 12x12 section of paper rigidly in place on stage.

AIR SANDER—*Sundstrand Machine Tool Co, Pneumatic Div, Rockford, Ill.* Speed of 6000 cpm makes orbital-type air sander ideal for rough sanding and preliminary operations. It has built-in water attachment for wet sanding.

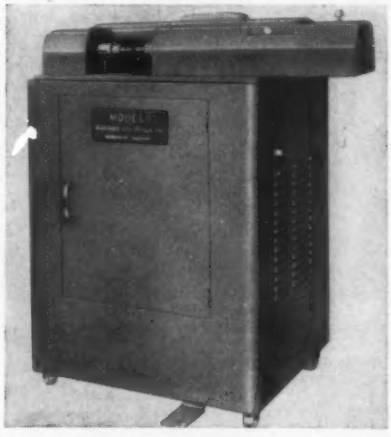


BELT GRINDER—*B & E Manufacturing Co, 407 Liberty St, Kansas City, Mo.* Model 500 contact wheel belt grinder has adjustment of 360° vertically.



BUFFING COMPOUND APPLICATOR—*George L Nankervis Co, 19255 West Davison, Detroit 23.* Air-operated automatic unit accommodates bars to 10 in. wide and 2 in. thick. Rate of feed is adjustable from 0.0015 to 0.015 ips.

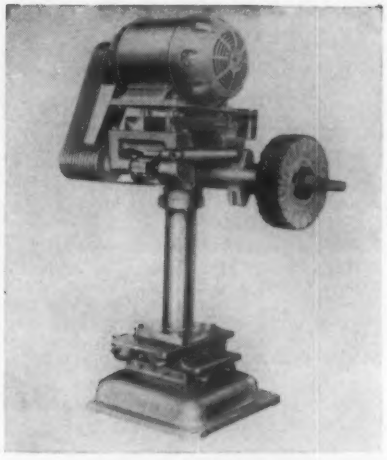
BRUSHES—*Mill-Rose Co, 1985 E 59th St, Cleveland 3.* Mini-Brushes, miniature, twisted in wire, ±0.001-in. dia. Bristles of stainless steel, steel, brass, hog bristle or nylon.



DEBURRING MACHINE — *Model Machine Co, 4929 Hawthorne St, Philadelphia 24, Pa.* Removes burrs from both sides of holes at rate of 600 to 3000 holes per hour—opposed cutters deburr both sides of diameters, flats, tubing, and irregular parts. Portable; uses standard countersink-type deburring tools; spindles rotate in opposite direction to give equalized cutting action.

TWIN-FACED BRUSH — *Industrial Div, Stanley Home Products, Easthampton, Mass.* Attached to power and hand-operated sweepers. Tab-Strip is available with brushes at any angle from 90° to parallel.

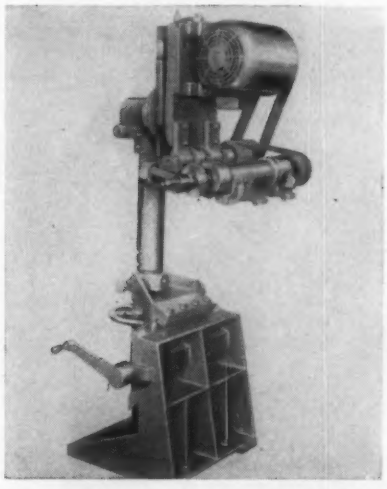
BUFFING HEAD—*The Murray-Way Corp, Birmingham, Mich.* Model 55 is positioned by controls on front of head. Rotates 360° on both axes simultaneously. Adjustable float restrictor controls degree of rise and drop of wheel.



POLISHING HEAD—*Hammond Machinery Builders, 1618 Douglas Ave, Kalamazoo, Mich.* Model 52-100 has maximum float of 6 in. Furnished with power feed for vertical lift or horizontal traverse.

BACK-UP PAD—*Alexander Brothers Belting Co, 406 N 3rd St, Philadelphia 23, Pa.* For portable rotary sanders; made of leather so resilient interwoven fibrous structure will withstand constant flexing. Can be supplied in degree of flexibility to conform to contours of work.

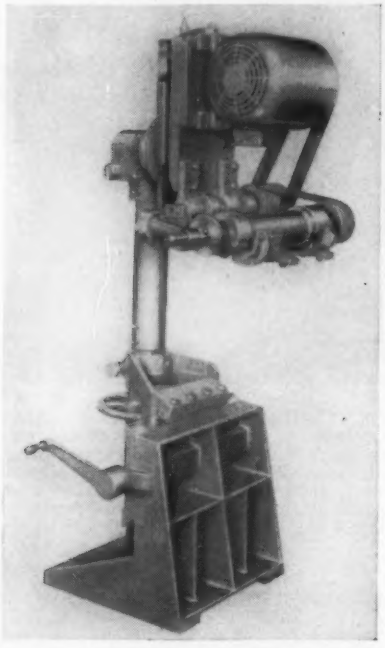
MOUNTED POINTS—*Atlantic Abrasive Corp, South Braintree 85, Mass.* For use on all types of precision instruments and machinery. Soft, cushion-like grinding action cleans, polishes, and deburrs all types of metals and plastics in one simple operation.



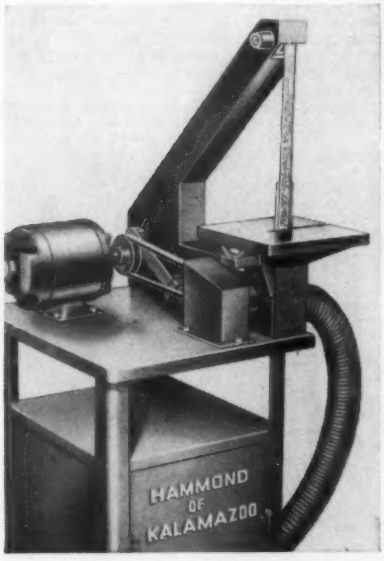
BUFFING HEAD—*Hammond Machinery Builders, Inc, 1618 Douglas Ave, Kalamazoo, Mich.* Model 50-99. 3, 5, or 7½-hp 1750 rpm motor, or 10-hp 3500 rpm motor. Head floats to 4 in. to follow irregular surfaces. Power wheelhead available; ammeter is standard.

BRUSH—*Bitwell Brush & Mfg Co, 225 S Church St, Rockford, Ill.* For cleaning leader-pin holes in die sets; equipped with bristles resistant to acids and alkalies common to oil, naphtha, detergents and industrial cleaning fluids.

CHAMFERING MACHINES—*Modern Industrial Engineering Co, 14230 Birwood Ave, Detroit 38, Mich.* Four machines: three are universal design, and one is a special six-way chamfering machine. Two universals are for external gears and third is for internals. Single and double-station external Burr-Masters are available.



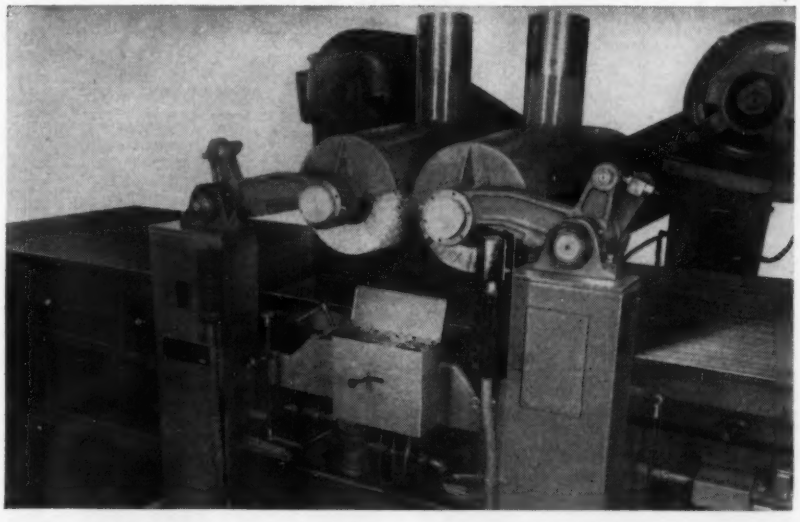
FINISHING MACHINERY — *Hammond Machinery Builders, 1618 Douglas Ave, Kalamazoo, Mich.* Model 50-99 polishing and buffing head and stand unit. Max float action of 4 in. allows head to follow surface of irregular parts.



ABRASIVE-BELT MACHINE — *Hammond Machinery Builders, 1600 Douglas Avenue, Kalamazoo, Mich.* 1-in. flexible-abrasive-belt grinder-polisher; 10½-in. throat depth permits finishing large, irregular shapes. V-belt drive; worktable size, 8x8 in.; belt speed, 2150 sfpm.

TURRET POLISHING MACHINE — *Hammond Machinery Builders, Inc, 1600 Douglas Ave, Kalamazoo, Mich.* Model K-62-7 is a larger rotary automatic indexing polishing and buffing machine, accommodating up to 6 head and stand units. Spindles are driven by ¾-hp motor; speeds from 15 to 45 rpm or from 50 to 150 rpm.

POLISHING MACHINES — *Central Machine Co, Worcester.* Horizontal tandem-roll polishing machines have electro-hydraulic controls and patented control follower. Tandem permits rough-cut or cut-down, and finishing, at one pass. Stroke from 2 in. to full capacity. Worktable can be oscillated crosswise.



POLISHING STONE—*Abrasive Engineers, 245 Waukegan Ave, Highwood, Ill.* Fixed abrasive lapping and polishing stone will give 2-mu-in. finish on hardened steel or soft alloys, can be wiped clean with oily cloth, and will not load.

BUFFING LATHE — *Hammond Machinery Builders, Inc, 1618 Douglas Ave, Kalamazoo, Mich.* Wide-swing Model RRO, is a two-spindle lathe, each with its own motor, motor control, and V-belt drive. Wheels up to 16-in. face.

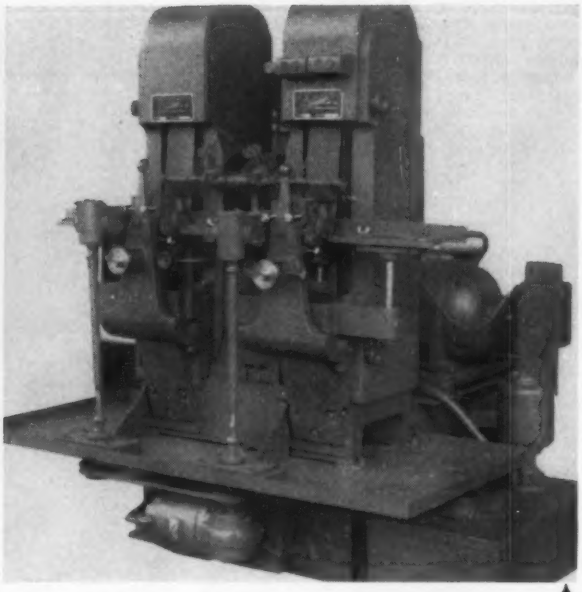
POLISHING BELTS—*Hartford Special Machinery Co, Hartford 12, Conn.* Diamond-studded nylon belts overcome problems of polishing carbide tube and rod drawing dies. Widths range from ⅛ to ⅜ in., for 75 or 104-in. continuous belts.

POLISHING HEAD—*Grinding & Polishing Machinery Corp, 2530 Winthrop Ave, Indianapolis.* For contour finishing of metal, wood, plastic, or ceramic pieces, has twelve brushes and twelve 1½-in.-width abrasive strips; diameter of 6½ in. Permits application to any small power tool up to 3500 rpm.

PLASTIC FINISHER — *Logo, Inc, 13799 South Avenue O.* For finishing phenolic plastic; hardness and adhesion qualities. Pigmented and pigmented-metallic forms.

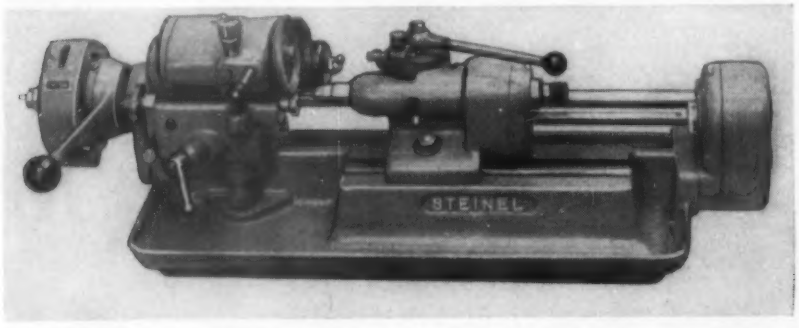
POLISHING CONTACT WHEEL—*Chicago Rubber Co, 2640 N Clybourn Ave, Chicago 14.* TF-54, of red rubber compound, abrasive- and oil-resistant. 20-durometer wheel to run at 10,000 sfpm. Wheel is dynamically balanced, with demountable rim or tire. Serrated, with rubber side flanges.

BELT POLISHING MACHINE—*Stephen Bader & Co, Rockville Center, NY.* Space saver has contact wheel, idler wheel, drive motor mounted on single base; polishes irregular work. Uses standard 132-in. belt; wheel diameters from 4 to 18 in. can be used without changing surface speeds or belt size.



CENTERLESS FINISHING MACHINE — *Production Machine Co, Greenfield, Mass.* Two-head type, using abrasive belts and coolants. Equipped with separate feed drive motor and recirculating coolant system. Capacity is up to ½-in. dia of any length.

ABRASIVE CLOTH BELT — *Minnesota Mining & Manufacturing Co, 900 Fauquier St, St Paul 6, Minn.* Three-M-ite Multicut cloth belt is a heavy-coated abrasive product said to combine the polishing characteristics of hand-coated glue and grain setup wheels and belts. Belt is available in grit 60 and 150.

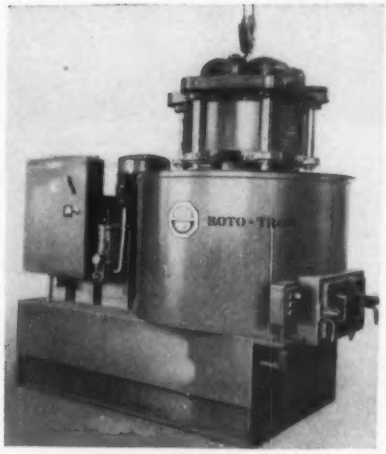


PIGMENTED PHENOLIC RESIN — *Parker Rust Proof Co, 2169 E Milwaukee Ave, Detroit 11, Mich.* For use over Parco Compound, products are said to have excellent corrosion resistance; production pieces finished with Parcolacs have withstood 100 hours in salt spray.

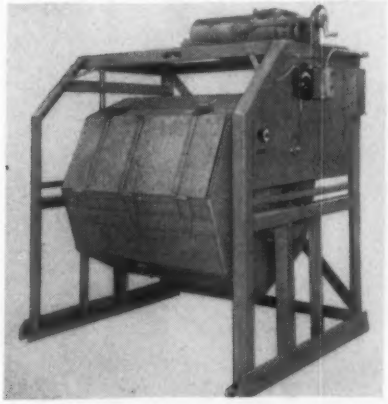
INSULATING CEMENT — *Kragor Corp, 884 N Graham St, Allentown, Penna.* Bonds to clean, dry surface with gripping power of 41.7 psi. Type "C" is for applications from 0 to 212 F; type "B" for higher temperatures.

PIVOT BURNISHING MACHINE — *Morey Machinery Co, Inc, 383 Lafayette St, New York 3, NY.* Finishes bearing surfaces on spindles, pivot shafts, and drive journals. One model handles diameters from 0.019 to 0.078 in., another from 0.039 to 0.314 in.

FINISHING EQUIPMENT—*Speed-D-Burr Div, Miller Machine Tool & Gage Shop, 3613 San Fernando Rd, Glendale 4, Calif.* Barrel finishing unit, for deburring small, intricate parts. Cabinet unit with 1/3-hp motor.



FINISHING MACHINE—*Roto Finish Machinery Co, Kalamazoo, Mich.* In the Roto-Tron, for dry or wet tumbling, parts are oscillated through static abrasive media. Parts must be rigidly fixtured during finishing operation.



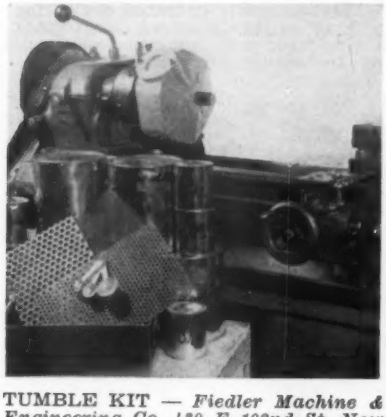
TUMBLING BARREL—*Tumb-L-Matic, Inc, 4510 Bullard Ave, New York 70.* Thermostatically controlled, low-temperature unit for deflashing parts molded of soft rubber. Utilizes liquid CO_2 with constant control of temperature. Temperature range of 0 to —120 F.

TUMBLING BARREL — *BMT Mfg Corp, Elmira Heights, NY.* SlideHoning equipment has 48-in. revolving disk on which 25 barrels can be mounted. Speed is variable from 11 to 28 rpm. Different parts can be tumbled wet or dry, and without mixing. Rotary, centrifugal, or slide tumbling can be done simultaneously.

EXTRUDED PLASTIC SCALER—*Pressite Engineering Co, 3798 Chouteau Ave, St Louis 10, Mo.* To seal metal seams, glass, and rubber channels. Water resistant, and temperature resistant from — 50 F to 375 F.

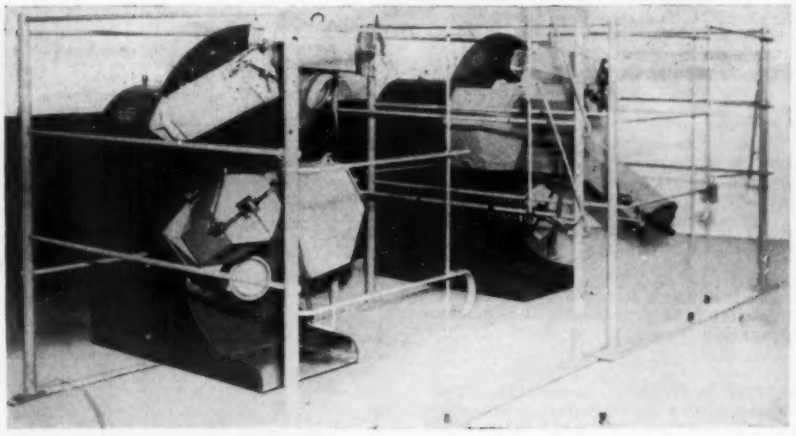
IMMERSION TIN PROCESS — *The Enequist Chemical Co, 100 Varick Ave, Brooklyn 37, NY.* Corrosion-resistant coating by fast method without use of current. Operated at 75-85 F in plastic, glass, or stainless steel tanks or crocks.

ABRASIVE STICKS & BLOCKS — *Sandusky Abrasive Wheel Co, 636 W Ransom St, Kalamazoo, Mich.* 22 sizes in rectangular, square, sylindrical, and triangular shapes, ranging from 3 to 8 in. long.



TUMBLE KIT — *Fiedler Machine & Engineering Co, 430 E 102nd St, New York 29, NY.* Portable tumbling barrel with 10-in. hexagonal OD and 4-in. width will take 20 lb of parts not exceeding dimension of 3 in. Barrel is chucked on back-geared lathe and rotated at 20 to 45 rpm.

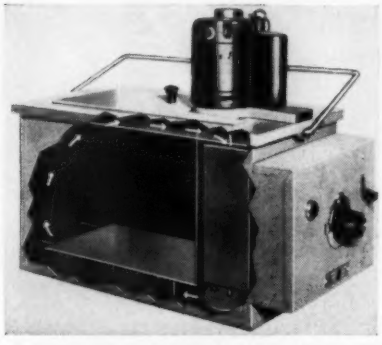
TUMBLING BARRELS—*The Globe Stamping Div, Hupp Corp, 1250 W 76th St, Cleveland 2.* Power Tilt device optional with Globe's direct-drive barrels at rated capacities to 3000 lb. Shaft speed on tilting unit is 48 rpm providing limit-to-limit tilt time of 30 sec for ¾-hp unit, and 20 sec for lighter barrels.



TUMBLING MEDIA—*Rampe Mfg Co, 3320 St Clair Ave, Cleveland 14, Ohio.* Molded nylon; various shapes and sizes for deburring and polishing fragile parts.

ABRASIVES — *Brightboy Industrial Div, Weldon Roberts Co, Sixth Ave & North 13th St, Newark 7, NJ.* Rubber-cushioned; aluminum-oxide and silicon-carbide types in grain sizes from extra coarse to extra fine.

TUMBLING BARREL—*Lord Chemical Corp, York, Pa.* LORCO Model 100 has 7½x12-in. drum, occupies 14x24 in. bench space. Two different speed controls.



DIPPING TANK — *Globe Imperial Corp, 2023 Kishwaukee St, Rockford, Ill.* Has 14-lb capacity, impeller-type agitator, and special heating elements. Equipped with Robertshaw thermostat.

COATING—*Booker-Cooper, Inc, 6940 Farmdale Ave, North Hollywood, Calif.* Violite protects surface coatings against ultraviolet light and ozone. Reportedly has excellent resistance to excessive humidity or salt-laden atmospheric conditions.

ELASTIC COATING—*Atlas Mineral Products Co, Mertztown, Penna.* Light-duty corrosion resistant, in gray or black colors.

ABRASIVE MATERIAL—*The Carborundum Co, Niagara Falls, NY.* Sand Screen, non-clogging, open-mesh, for sanding operations where loading is a problem. For ferrous and non-ferrous metals. Grit sizes of 180 and finer.

CUT-WIRE SHOT—*Harrison Abrasive Div, Metals Disintegrating, Elizabeth, NJ.* For cleaning, peening, tumbling, cutting, abrading; cut from high-grade wire to form cylinders so length of each equals diameter of wire. Shot is available in steel, copper, and stainless in range of wire diameters.

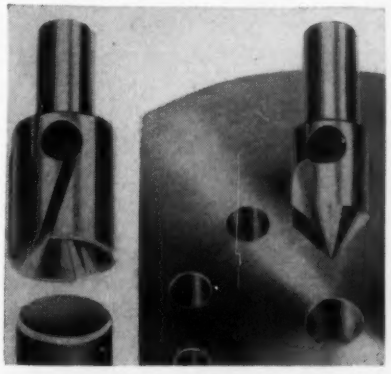
CADMIUM PLATING — *Frederic B Stevens, Detroit 16, Mich.* Electroplating process for iron and steel; used with Liquid Brightener.

FINISHING CHIP—*Chicago Wheel and Mfg Co, 1101 W Monroe St, Chicago 7, Ill.* Novaculite chips have conchoidal shape, irregularly formed with sharp edges and elongated points.

ABRASIVE STONES—*Random Abrasive Co, 449-N 6 Central Ave, Orange, NJ.* Aluminum oxide and silicon carbide, with vitrified silicate, shellac, and phenolic bonds.

SILICATE COATING — *Allied Porcenell, Inc, 851 S Market St, Waukegan, Ill.* Corrosion-proof coatings bond to basis metal at less than 1250 F. Scratch hardness and abrasion resistance.

DE-RUSTER — *Oakite Products, 124 Rector St, New York 6.* Rustripper, for alkaline de-rusting of precision parts where dimensional change and embrittlement must be avoided.



DEBURRING TOOLS—*Nobur Manufacturing Co, 717 N Victory Blvd, Burbank, Calif.* Two tools for deburring and chamfering inside and outside diameters. Made from HSS, heat-treated, precision-ground.

CLEANING and FINISHING

RUST INHIBITOR—*E F Houghton & Co, 303 W Lehigh Ave, Philadelphia 33.* Rust Veto Spray in 12-oz, pressurized, pushbutton dispenser, for small items such as tools, dies, gages, precision parts.

SPRAY LUBRICANT — *Gilron Products Co, 452 Hanna Bldg, Cleveland 15, Ohio.* No. 1004 for spray coating applications. Compound almost air dries.

RUST PROTECTOR—*Protective Coatings Corp, Park Ridge, Ill.* Kerpro VPI is available in a pressurized can. Nonflammable, non-toxic product.

RUST-PROOFING — *American Sand-Banum Co, 9 Rockefeller Plaza, New York 20.* Rustend is both a primer and coating for new metals, and touch-up compound for rusted surfaces.

CORROSION INHIBITOR—*Shell Oil Co, 50 W 50th St, New York 20, NY.* VPI 250, can be applied with a squeeze bottle, a salt shaker, or similar device.

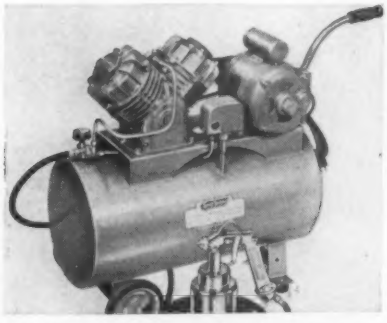
RUST PREVENTIVE — *Oakite Products, 19 Rector St, New York 6, NY.* Fluid has flow point of 140 F, and its viscosity is 116 to 119 SUS at 70 F. It is applied by brushing, spraying or by tank immersion.

PROTECTIVE PAINT—*Sealube Co, Wakefield, Mass.* ZRC, for iron surfaces contains 93 to 95% metallic zinc. May be painted or sprayed, provides rust protection over wide areas.

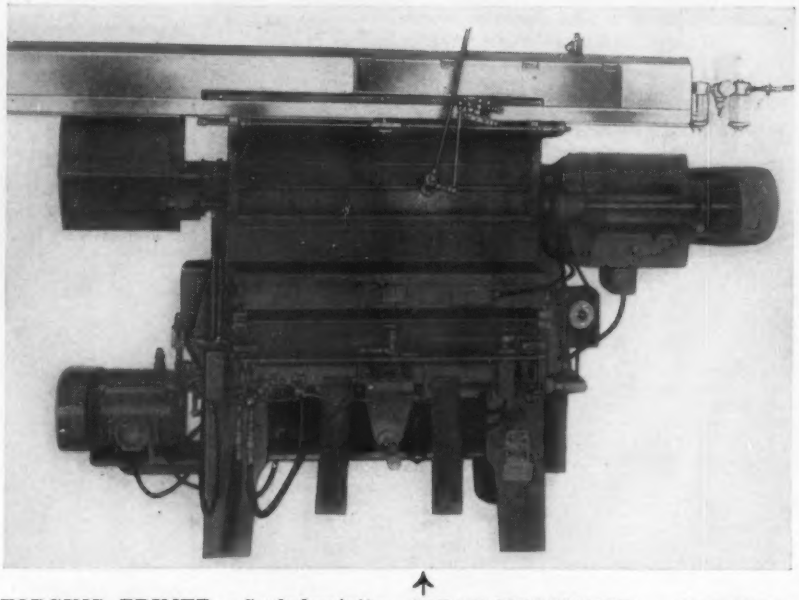
DRY LUBRICANT—*Everlube, Corp of America, 6940 Farmdale Ave, North Hollywood, Calif.* For use at 1000 F, but effective to —60 F. Lubricant is fused on.

PROTECTIVE COATING — *Alfred Hague & Co, 227 54th St, Brooklyn, NY.* Grade RA black paint; combination of rubber and bitumen.

PROTECTIVE COATINGS—*Allied Research Products, Inc, 4004-06 East Monument St, Baltimore 5, Md.* Iridite line of corrosion-resistant finishes for non-ferrous metals.



TANK SPRAYER—*W R Brown Corp, 2701 N Normandy Ave, Chicago 35, Ill.* Model 450; by twin compressors deliver 4 cfm. Complete unit is mounted on rubber-tired wheels removable for stationary use.



SPRAY-GUN MOVER — *Clair Manufacturing Co, 1002 S Union St, Olean, NY.* Hydraulically operated device for applying surface finishing compounds to wide-faced buffs, operates on standard surface-finishing machine.

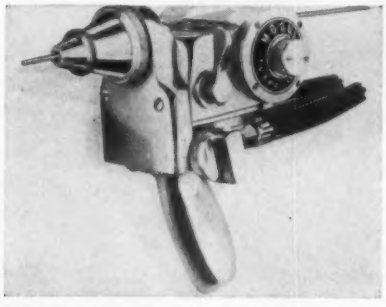
FORGING PRIMER — *Spekaluminite Co, 100 S Water St, Ossining, NY.* Brushed, sprayed, or dipped before heating; reduces scale.

METAL SPRAY UNIT—*Wall Colmonoy Corp, 19345 John R St, Detroit 3.* Model C applies hard-facing coatings in powder form. Adapted to application of Colmonoy nickel-base wear- and corrosion-resistant hard-facing alloys to steel, stainless, and some cast iron and copper alloy parts.

MASKING TAPE — *Behr-Manning Corp, Troy, NY.* No. 113 for pre-treated surfaces, such as anodized aluminum and magnesium. Adheres at baking temp to 350 F.

ACRYLIC SPRAY COATING — *Krylon, Inc, 2038 Washington Ave, Philadelphia 46.* 12-oz pressure container in Machine Gray, Light Gray, Chrome Yellow, Cherry Red, Hunter Green, and Regal Blue.

METAL PRIMER—*Plasti-Kote, Inc, Cleveland, Ohio.* Aerosol product has zinc chromate base, can be used for painting all metal surfaces. Available in a 12-oz can with self-spray attachment.



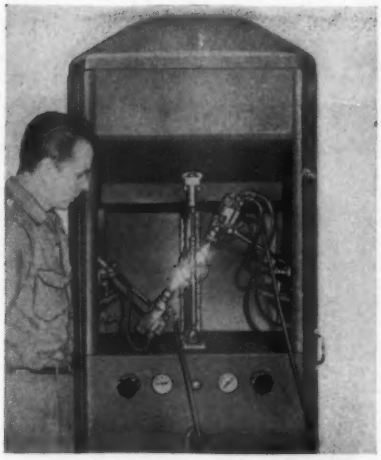
METALLIZING GUN—*Metallizing Co of America, 3520 W Carroll Ave, Chicago 24.* Turbo-Jet sprays from wire of 20 ga to 3/16-in. diameter, from high melting point molybdenum to lowest melting point wires. Operates on acetylene, propane, or natural gas, at 15 psi. Magnetic-controlled governor uses 60 psi air. Wire speed from 2½ ipm to 20 fpm.

ALUMINUM PAINT — *Sapolin Paints Inc, 229 E 42nd St, New York 17, NY.* Plates all high-heat metal surfaces with one coat; bright finish prevents rust, cracking, or peeling. Product withstands temperatures up to 1200 F without discoloring or blistering.

HEAT-RESISTANT PAINT — *Speco, Inc, 7308 Associate Ave, Cleveland 9, Ohio.* Heat-Rem metallic red and metallic blue; consists of aluminum flakes in silicone base. Temperatures to 1700 F.

STRIPPER—*Beck Equipment Co, 3350 West 137th St, Cleveland 11, Ohio.* Econostrip for removing paint, lacquer, enamel, and hard-to-strip finishes from a variety of metals.

PAINT STRIPPER—*Octagon Process, Inc, 15 Bank St, Staten Island 1, NY.* Removes vinyl enamel from phosphatized aluminum without damaging base metal.



PAINTING MACHINE—*Finish Engrg Co, Erie, Pa.* RotoSprayer includes booth, fan, guns, pressure tank; air-operated, eliminating fire hazard. Automatically grips part, rotation starts, paint guns go on, then off, rotation stops, and hold-down releases.

PAINT BOOTH SHIELD—*Thompson & Co, Allegheny Ave, Oakmont, Pa.* Applied to surface by brush, trowel, or knife to thickness of 1/16 in. May be covered by any common paper; when overspray builds up paper can be stripped off by hand or scraper.

PAINT REMOVER — *Du Pont Co, Kinetic Chemicals Div, Wilmington, Del.* Formula producing a foaming action said to be faster, cleaner, and more active than brush-applied types.

SPRAY GUN—*Scientific Electric Co, 107 Monroe St, Garfield, NJ.* Electrostatic spray painting, is done with a micro-pressure "Super-Ionic" gun.

PAINT SHIELDS—*The By-Buk Co, 4314 W Pico Blvd, Los Angeles 19, Calif.* Masking caps, both re-usable and disposable, for shipping hermetic-seal terminals from paint spray.

SPRAY BOOTH COATING—*The DuBois Co, 1120-40 West Front St, Cincinnati 3, Ohio.* Peel Filmite; flameproof coating adheres to metal surfaces.

METAL PRIMER—*Rusticide Products Co, 3125 Perkins Ave, Cleveland 14.* Ospho is applied directly over rust to stop rusting action by converting oxide to phosphate. Can be used as primer on new metal.

SPRAY MASK — *Chemical Development Corp, Danvers, Mass.* Plastic putty to mask metal, plastic, and other surfaces during paint-spraying, cementing, flocking, and similar operations.

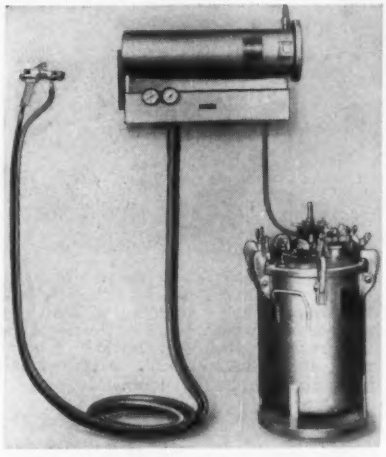
SPRAY BOOTH PROTECTOR—*Adhesive Products Corp, 1660 Boone Ave, New York 60, NY.* Applied to spray booths or turntables, prevents paint and adhesives from sticking to walls of the booth. Accumulation of sprayed materials can be peeled off.

LIQUID STRIPPER—*The DuBois Co, 1120 W Front St, Cincinnati 3, Ohio.* Strypp-Away, for removal of Epons and other chemically resistant finishes, may be used at temp as high as 220 F.

STOP-OFF PAINT — *Park Chemical Co, 8074 Military Ave, Detroit.* Metal Stop has distinct gray-white color which shows up part area to be protected in metalizing. Edge lining is reportedly very sharp.

PHOSPHATIZING COMPOUND — *Pennsylvania Salt Mfg Co, 1000 Widener Bldg, Philadelphia 7.* Fosbond 61, for use on zinc surfaces, may also be used on steel. Provides fine crystalline coating as base for subsequent painting operations.

CLEANING CLOTHS—*Associated Producers, Inc, 1019 E Eight Mile Rd, Hazel Park, Mich.* Treated with solution which remains tacky; for cleaning surfaces to be painted.



HOT-SPRAYING PAINT UNIT—*Imported by Special Equipment Corp, 26 W Putnam Ave, Greenwich, Conn.* Therm-O-Spray, made by Swedish Machine Corp, Stockholm, heats compressed air to 300F, and air then heats paint. Air, reduced to 75 to 100 psi passes to spray gun. Heat is maintained by regulating valve.

PROTECTIVE COATING — *Magic Chemical Co, 121 Crescent St, Brockton 2, Mass.* Based on polyvinyl chloride, coating can be brushed, sprayed, or dipped, dries to tough, flexible finish on metal, wood, or other material.

PAINT STRIPPER — *Van Straaten Chemical Co, 546 W Washington St, Chicago 2.* Non-dusting Vantrol 5610A is said to reduce stripping time to 1/3; reportedly removes heavy greases, mineral oils, sludge.

VINYL COATING—*Detrex Corp, Detroit 32.* White Vincote, sprayed on wall surfaces of paint spray booths can be peeled off quickly and easily.

PRESERVATIVE PAPER—*Nox-Rust Chemical Corp, 333 N Michigan Ave, Chicago 1.* Vapor Wrapper for rust-proofing metal, impregnated with chemical which stimulates instantaneous production of protective vapor. Eliminates need for interim protection by preservative oils.

SPRAY PAINTER — *Gyromat Corp, Fairfield, Conn.* Centrifugal force atomizes spray material and directs it to products passing through spray chamber. Within chamber, atmosphere becomes saturated with solvent of respective material being sprayed. Over-sprayed particles are collected, drained from the walls, and reused.

ENAMEL STRIPPER—*Enthone, Inc, Dept AM, 442 Elm St, New Haven, Conn.* Enamel is removed by wrinkling action, and stripper and enamel are water-rinsed off.

METAL PRETREATMENT — *Specialty Coatings, Inc, Allegheny Ave, Oakmont, Pa.* Type AS-4 Vinsynite for all types of metals, ferrous and nonferrous. Combines application of phosphate coating and thin primer-like film, for corrosion-resistance and max adhesion for top coats of paint.

OVERLAY—*Eutectic Welding Alloys Corp, 40-40 172nd St, Flushing, NY.* EutecRod 186, low-melting, for building up or overlaying steel cast iron, copper and alloys of copper and nickel, as well as for building up bearings, overlaying shafts, valve seats.

COUNTER-RUST — *Adelphi Paint & Color Works, Inc, 86-00 Dumont Ave, Ozone Park 17, NY.* Will protect a steel structure from corrosion for a period of from 5 to 10 years with a single coat. Moisture-resistant product can be applied over any film of paint in fair to good condition.

TUNGSTEN HARDSURFACING — *The Lockrey Company, Southampton, NY.* Tungstide metal-cladding can be applied to any surface at room temperature. Imparts hardness and abrasion-resistance almost equal to metallic tungsten, but is self-lubricating as well.

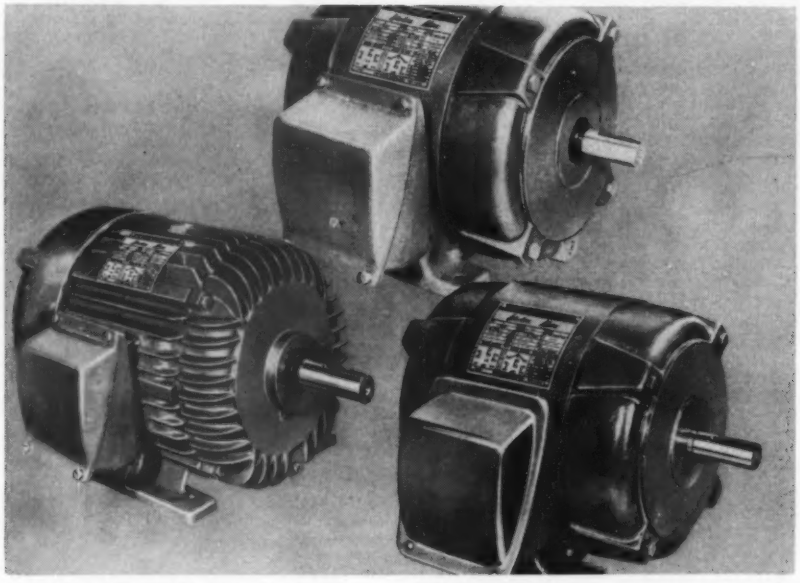
PROTECTIVE COATING — *Adhesive Products Corp, 1660 Boone Ave, New York 60.* Peelable Strip-Kote imparts tough, transparent film to prevent scratching or marring of highly-polished surfaces.

SPRAY FINISHING GUN—*The DeVilbiss Co, 300 Phillips Ave, Toledo 1.* Gun sprays plastic resin and catalyst at same time, using air line to feed catalyst. Single pressure control for resin, double pressure control for catalyst. Also developed is line of paint heaters which have hot-water circulating pump as only moving part.

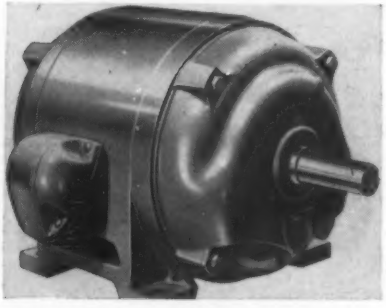
American Machinist 1955 PRODUCTION PREVIEW

PARTS AND MATERIALS

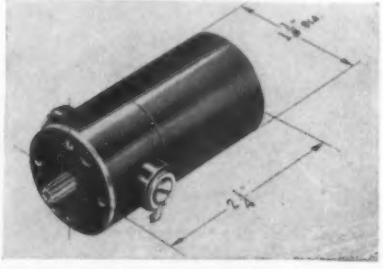
summarized from descriptions published during 1954



MOTOR CONTROL—*Techniflex Corp, Port Jervis, NY.* Zero-plugging control systems for instantaneous stopping of electric-motor-driven equipment.

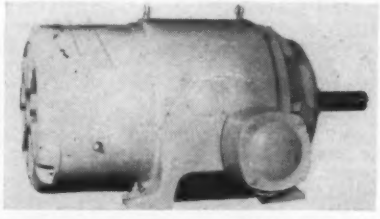


ELECTRICAL MOTOR—*US Electrical Motors, Inc, Box 2058, Los Angeles 54, Calif.* Conforms to NEMA specifications. Designated Uniclosed, Type H, it is more compact and offers complete drip-proof protection. Frame is solid cast iron and stator is prewound.



MINIATURE ELECTRIC MOTOR — *John Oster Mfg Co, Racine, Wis.* Delivers 1/30 hp at 6000 rpm. Unit will operate continuously for one hour.

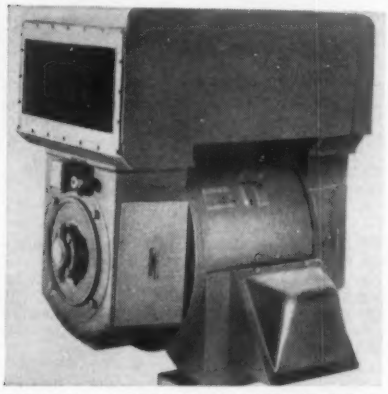
PUMP MOTOR — *General Electric, Schenectady 5, NY.* 1½ hp in single and polyphase open models, it can be mounted horizontally or vertically, conforms to standard NEMA dimensions, is interchangeable with ratings down to ¼ hp.



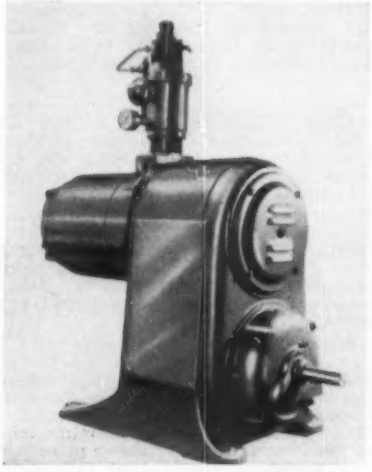
TEFC MOTORS—*US Electrical Motors, Inc, Box 2058, Terminal Annex, Los Angeles 54, Calif.* Max ratings of electrical horizontal Type SD and explosion-proof Type SE have been increased to 150 hp.

RIGHT-ANGLE GEARMOTOR —*U S Electrical Motors Inc, Box 2058, Terminal Annex, Los Angeles 54, Calif.* Syncrogear with explosion-proof motor for locations where dangerous fumes exist. 1-hp rating, speeds from 45 to 155 rpm, 3-phase ac motor.

MOTORS — *Westinghouse Electric Corp, 401 Liberty Ave, Box 2278, Pittsburgh 30, Pa.* Meet NEMA standards for smaller motors per horsepower. In addition there are improvements in insulation, more efficient and better protected bearings, improved ventilating system, and quieter operation.



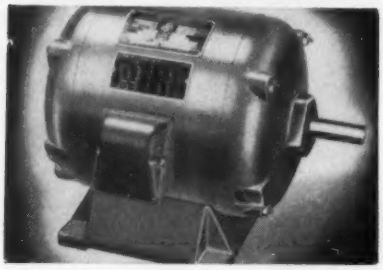
TOTALLY ENCLOSED DC MOTOR—*General Electric, Schenectady 5, NY.* From 15 to 200 hp; features 50% greater heat transfer in a 37% smaller unit. Ventilation is independent of motor speed; double system of blowers.



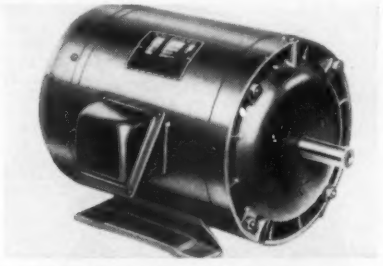
SPEED CONTROL MOTOR—*US Electrical Motors Inc, Box 2058 Terminal Annex, Los Angeles 54, Calif.* Automatic speed control by such variables as pressure, temperature, speed, or liquid level. An improved pneumatic control, called Varitrol, has been designed into the Varidrive motor. Designed to operate on 60 to 100 psi, supply unit is controlled by air cylinder using air on both sides of piston.

MOTOR BASE—*Quintin Kearney, 220 Congress Ave, Lansdowne, Pa.* Provides 6-in. vertical adjustment. Accommodates electric motor frame 284, 7½ hp at 1800 rpm.

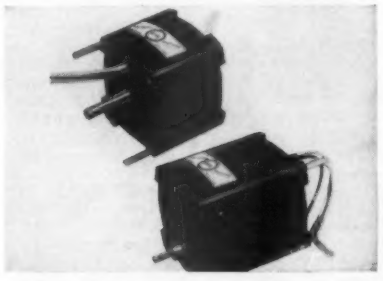
SHADED-POLE MOTOR — *General Electric Co, Schenectady 5, NY.* KSP-39 in ratings of 1/12, 1/10, ⅛, and 1/6 hp. Optional features include internal baffling, single- and double-shaft models.



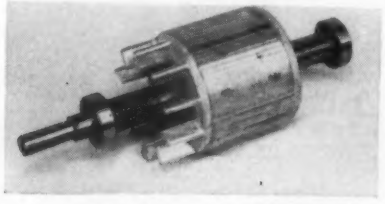
INTEGRAL-HP MOTORS—*A O Smith Corp, Box 584, Milwaukee 1, Wisconsin.* To provide economical changeover to NEMA Standards. New motors will be offered in either the present or in new mountings. All performance characteristics of the old and new motor lines will be equal.



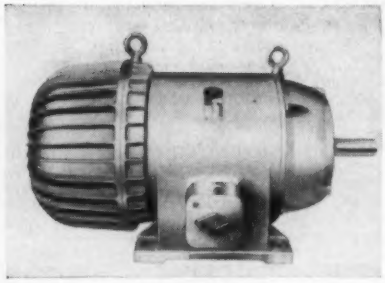
ELECTRIC MOTORS — *Howell Electric Motors Co, Howell, Mich.* Series 100 re-rated polyphase in 1 to 3-hp class, built to standards set by NEMA. First motors offered in line are open drop-proof, and totally enclosed fan-cooled types.



MOTORS—*The George W Borg Corp, 120 S Main St, Janesville, Wis.* Two or four-pole synchronous or induction type with ratings of 1/2000, 1/1500, 1/1000, or 1/750 hp with power dissipated within safe temperature rise. For operation on 115-v, 60-c power.



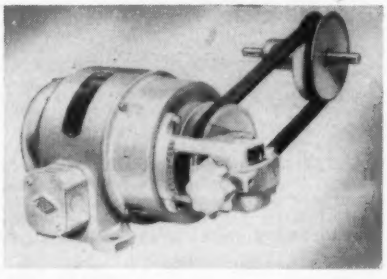
CONSTANT SPEED MOTOR—*Kurz & Root Co, Appleton, Wis.* Reluctance-type, synchronous motor is about same size as squirrel cage unit, operates at only slightly lower power factor and efficiency; available in higher ratings than ordinary reluctance motors.



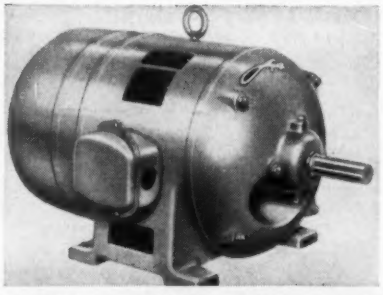
FAN-COOLED MOTOR — *Reuland Electric Co, Alhambra, Calif.* Higher hp from small frame sizes. Air is sucked in through screen filter and blown over all internal areas. Ratings from 15 through 30 hp, drip-proof construction.

TORQUE MOTOR—*Reuland Electric Co, Alhambra, Calif.* Can be stalled or locked with current on without motor damage. From ½- through 10-ft-lb ratings.

FLUID-SHAFT MOTORS — *Reuland Electric Co, Alhambra, Calif.* Incorporate "midget" fluid coupling for use on ratings from ½ hp through 1 hp. Greatly reduced size is effected by the development.



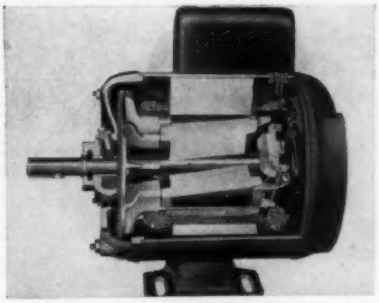
MOTOR—*Reuland Electric Co, Alhambra, Calif.* Adapter and bell for direct mounting of Reeves Flexi-Speed drives. Ratings: ½ and ¾ hp in 1800 and 1200 rpm input speeds; 1 hp in 1800 rpm.



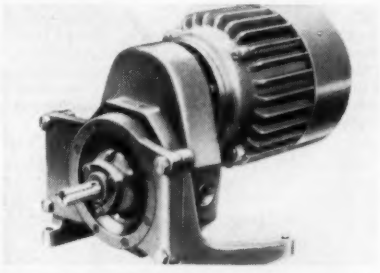
INTEGRAL BRAKEMOTOR — *Louis Allis Co, Milwaukee 7.* Short length made possible by utilizing motor and bracket as integral part of disk brake. NEMA sizes from 203 to 326, max continuous-torque duty from 3 to 50 ft-lb.

ACTUATOR MOTOR—*Dalmotor Co, 1309 Clay St, Santa Clara, Calif.* Dalmotor SR-43, intermittent duty, for low- or high-speed, linear- or rotary-actuator mechanisms. Automatic clutch brake applies 2 in.-oz of torque to load.

SYNCHRONOUS MOTOR — *R W Cramer Co, Centerbrook, Conn.* Type KX delivers 30 in.-oz of torque at 1 rpm. Speeds from 60 rpm to 1 rpd for either right, left, or oscillating rotation.

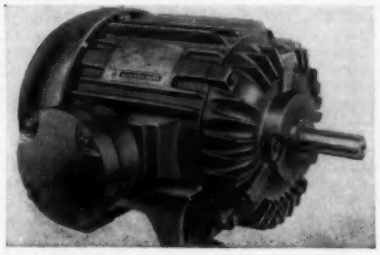


FRACTIONAL-HP MOTORS—*Century Electric Co, St Louis, Mo.* Form F motors incorporate new techniques which permit more horsepower in smaller frames. Motors are available as Type SP: split-phase, single-phase; Type CS: capacitor-start, single-phase; Type SC: squirrel-cage, polyphase.



GEARED MOTORS—*Belgian Electric Sales Corp, 40 East 49th St, New York 17.* SADI units meet NEMA specifications. Gears are of planetary construction equipped with ACEC totally enclosed fan-cooled motors. Power range from 1/3 to 15 hp., output speeds down to 0.31 rpm, reduction ratios as high as 3657:1.

SERIES MOTOR—*Howard Industries, Inc, Racine, Wis.* Model 512 is die-cast from Zamak No. 3 and held to close tolerances. Made in both open and closed construction; internal fan is optional.

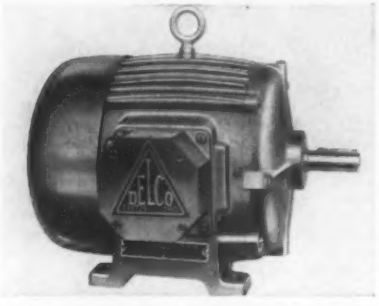


MOTORS—*Allis-Chalmers, Milwaukee 1, Wisconsin.* Line of ac squirrel-cage induction motors in frame sizes up to 326 meet new NEMA standards. Both open and totally enclosed (fan cooled and explosion cooled) models.

PARTS and MATERIALS—electrical

MOTORS — *Sterling Electric Motors, Inc, 5401 Telegraph Rd, Los Angeles 22, Calif.* Normal-speed electric motors in frame sizes 182 and 184 built to NEMA standards. Eliminate 50% of inactive space in previous design.

DC MOTORS—*Mission-Western Engineers, Inc, 132 W Colorado Blvd, Pasadena 1, Calif.* And gear motors; supplied with overload-torque-limiting clutches. Miniature units measure 1 3/16 in. in diameter by 4 in. in length; output speeds can be varied.



MOTORS—*Delco Products Div, General Motors, Dayton 1, Ohio.* Squirrel-cage induction units meet NEMA standards on re-rated frame sizes from 182 through 326.

MOTOR—*Dalmotor Co, 1375 Clay St, Santa Clara, Calif.* Type PM-47 miniature permanent-magnet motor for light-weight-load applications; 1/400 hp with operating rotor speed of 10,500 rpm.

MERCURY-RECTIFIER DRIVE — *Reliance Electric & Engineering Co, 1088 Ivanhoe Rd, Cleveland 10, Ohio.* For industrial applications requiring adjustable-speed service, Xatron V-S Drive uses single-anode mercury-pool rectifier tube.

VARIABLE SPEED DRIVES—*Link-Belt Co, 307 N Michigan Ave, Chicago 1, Ill.* For 20 to 25 hp applications. In addition to the basic H-6 PIV of 25-hp capacity, an HG-6 drive is furnished with single-reduction-input or single-reduction-output helical gear attachment.

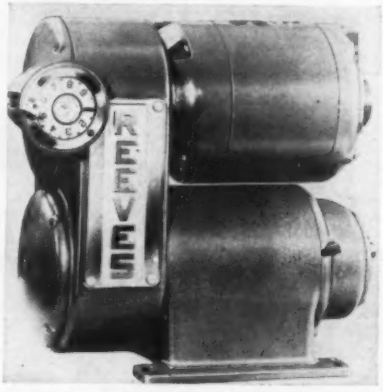
SPEED CONTROL—*Electro Products Labs, Inc, 4501 N Ravenswood Ave, Chicago 40.* For lathes; powered by fractional and 1-hp dc motors. Large short-period-overload capacity.

SPEED REDUCER—*Loral Electronics Corp, 794 E 140th St, New York 54, NY.* Motorized sub-fractional-hp reducer housed in precision-machined die casting and powered by shaded-pole motor.

VARIABLE-SPEED CONTROL—*Electro Products Laboratories, Inc, 4501 N Ravenswood Ave, Chicago 40, Ill.* For fractional and 1-hp dc motors. Control is within reach of the operator; to change speeds, a knob is turned.

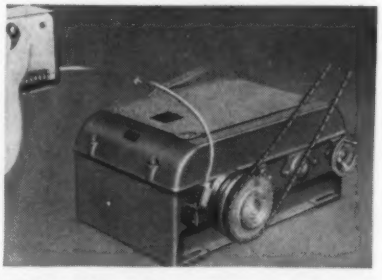
MOTOR PROTECTOR — *Mechanical Products, 1800 River St, Jackson, Mich.* Fits branch circuits of corresponding 4, 4½, 5, 5½, 6, and 7½-amp ratings as secondary protection for motors and appliances.

ADJUSTABLE DRIVE—*Franklin Control Corp, 1975 S Allis St, Milwaukee 7.* Nine sizes from ¼ through 5 hp. Selenium rectifiers supply power for dc motor, magnetic amplifiers control rectification to give drive with 100:1 range with flat speed regulation to full load at lowest speed.



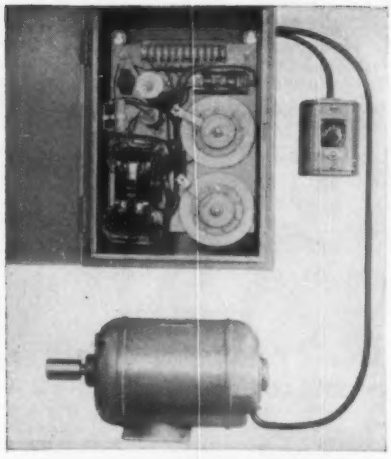
VARIABLE SPEED DRIVES—*Reeves Pulley Co, Columbus, Ind.* Fractional hp drives with ranges from 2:1 to 10:1 available in 112 different assemblies. Use threaded spiral groove lubrication assembly.

SPEED CONTROL — *The Brown-Brockmeyer Company, Dayton, Ohio.* Electronic variable speed motor control systems range from 1/15 to 3 hp and make use of special terminal block transformer construction, and critical-component plug-in assemblies.

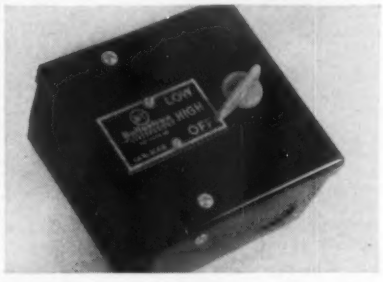


TRANSMISSION — *Reeves Pulley Co, Columbus, Indiana.* Combination of electric motion control and Reeves variable-speed transmission makes possible control acceleration, control deceleration, selection of operating speeds while machine is stopped, and jogging and inching. The electric clutch may be applied to either the input or output shaft of the transmission.

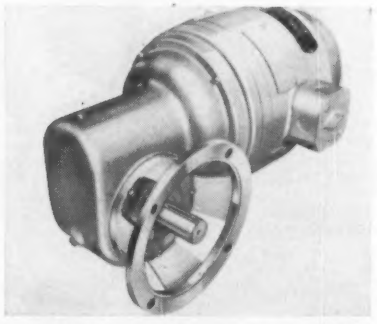
ELECTRONIC POWER SUPPLY — *Calidyne Co, Winchester, Mass.* Power input is rated 20 amp at 110 v ac; amplifier output is 400 watts. Permits user to start with one basic power supply and shaker unit.



ADJUSTABLE-SPEED DRIVES — *Clark Controller Co, 1146 E 152nd St, Cleveland 10, Ohio.* Provide adjustable motor speeds from an ac power source; speed is continuously adjustable over complete range by means of small rheostat. Device employs a full-wave, self-saturating, magnetic amplifier unit containing neither tubes nor moving parts.

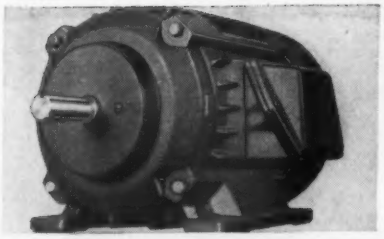


SPEED CONTROL—*Ballastran Corp, 1701 N Calhoun St, Fort Wayne 7, Ind.* For fractional-hp shaded-pole motors; available for three-speed operation. Three models are: cased control; panel-mounted control; and chassis-mounted control.

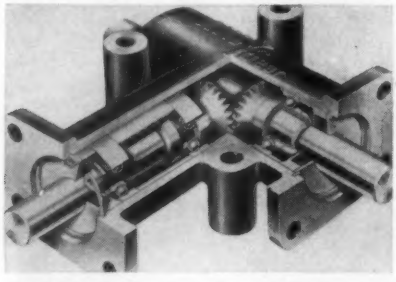


WORM REDUCER—*Reuland Electric Co, Alhambra, Calif.* Fluid-coupled; sizes: 1/3 and ½ hp (66W frame); ¾ and 1 hp (204W frame); 1½ hp (225W frame); 2 hp (254W frame). Speed reductions from 24 through 140 rpm.

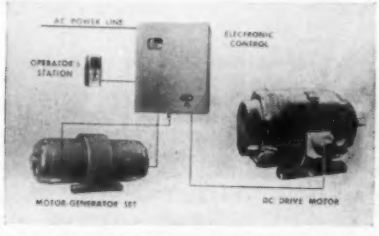
SPEED CONTROLS—*General Radio Co, 275 Massachusetts Ave, Cambridge 39, Mass.* Power ratings for speed controls now extends from 1/15 to 1½ hp. Five models are available including type 1702-M with remote-station push-button and speed control.



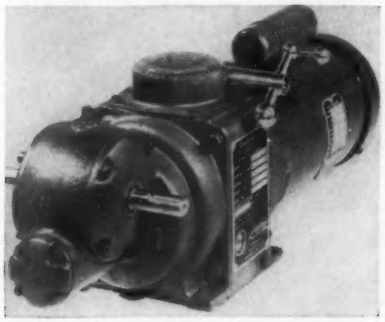
TRANSMISSION—*Reeves Pulley Co, Columbus, Ind.* Combination of electric motion control and variable-speed transmission makes possible control of acceleration, deceleration, speed selection while machine is stopped, and jogging and inching.



RIGHT-ANGLE GEAR UNITS—*Airborne Accessories Corp, Hillside, NJ.* Coniflex bevel gears have been substituted for straight tooth gears. Rated speed is 1800 rpm. The 1 hp unit lists at $39.75; the 1/3-hp at $19.50.



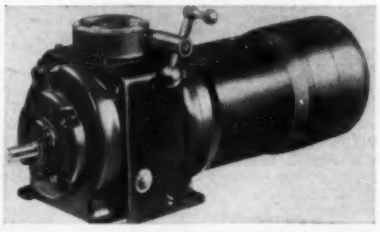
VARIABLE-SPEED DRIVES — *Master Electric Co, 127-34 Davis Ave, Dayton, Ohio.* Electronically controlled; ⅛ to 10 hp, responsive to speed, load, current, voltage, pressure, light, temperature, or time. Basic speeds are 2400, 1750, and 1150 rpm, adjustable to 1/6 basic speed.



WORM REDUCER — *Graham Transmissions, Inc, Menomonee Falls, Wis.* For Graham infinitely variable speed transmissions, 1/6 and ¼ hp. With single or double output shaft extension, horizontal or vertical, up and down. Worm ratios include 5:1, 12:1, 23:1, 45:1, and 60:1, providing speeds from 550 rpm to 0 down to 10 rpm to 0.

ADJUSTABLE-SPEED DRIVE — *The Louis Allis Co, Milwaukee, Wis.* Electronic Select-A Spede for operation from power lines; available with drive motors in standard NEMA frame sizes, ¾ to 15 hp. Speed ranges are 5 to 1, 20 to 1, 50 to 1, or 100 to 1.

CONTROL CENTERS—*Arrow-Hart & Hegeman Electric Co, Industrial Control Div, 103 Hawthorn St, Hartford 6, Conn.* Combination motor starters each housed in separate compartment which is part of a dead-front, factory-framed panel section.



VARIABLE-SPEED DRIVE—*Graham Transmissions, Inc, Menomonee Falls, Wis.* With built-in magnetic disk brake motor in 42-48 frame. Ratings are from ⅛ to ¼ hp. Transmission is available without motor and with variety of built-in reductions, both spur and worm types.

COMBINATION STARTERS — *Ward Leonard Electric Co, Mount Vernon, NY.* For use wherever non-reversing magnetic cross-the-line starters with disconnect means at the starter location are specified.

PHOTOELECTRIC RELAYS — *General Electric, Schenectady 5, NY.* One rated at 450 operations per minute and the other at 600, may be used in applications of counting, sorting, indicating, and controlling.

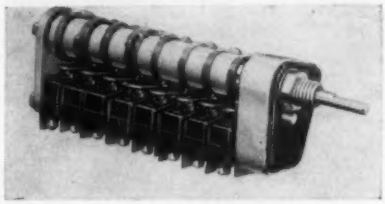
OUTLET BOX—*The Fostoria Pressed Steel Corp, Fostoria, Ohio.* Portable, wired with three outlets, one hot, 2 controlled by toggle switches, rated 10 amps.

THERMOSTAT — *Stevens Mfg Co, Mansfield, Ohio.* Stemco Type A make-and-break unit for close control of temperatures in electronic, appliance, and industrial applications, uses disk-design bimetal thermal element.

CONNECTOR—*Unimatic Corp, 52 East Centre St, Nutley, NJ.* Model 245 ⅜-in., 45° Harbot unit for attaching armored cable to knockout boxes.

DUAL-ELEMENT FUSES — *Economy Fuse & Mfg Co, 2717 N Greenview Ave, Chicago, Ill.* Eliminate unnecessary blowouts and resulting downtime losses. Protection extends up to 500% overloads with provision for immediate blowouts on short circuits.

INSULATION — *Minneapolis-Honeywell Regulator Co, Industrial Div, Philadelphia 44.* Moisture-proof, high voltage, for use in internal wiring of electronic instruments; thermoplastic material is recommended for high humidity conditions.



ROTARY SWITCH—*Micro Switch, Div Minneapolis-Honeywell Regulator Co, Freeport, Ill.* Subminiature rotary selector switches and two-circuit double-break switches now available.

LIMIT SWITCH—*Micro Switch Div, Minneapolis-Honeywell Regulator Co, Freeport, Ill.* Operating head adjustable to four horizontal positions; roller may be reversed.

ELECTRICAL CONTACTS — *Gibson Electric Co, 8308 Franktown Ave, Pittsburgh 21, Pa.* Made from copper graphite by powder metallurgy. For use when high conductivity, non-sticking properties and economy are factors.

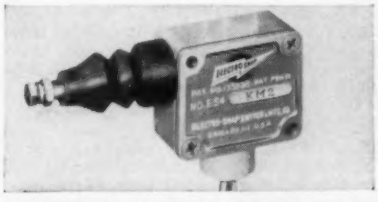
LIMIT SWITCH—*Square D Co, 4041 N Richards St, Milwaukee 12, Wis.* Class 9007 Type T machine tool unit for easy adjustment of basic device to obtain eleven different contact operating sequences using only a screwdriver. Variety of operating lever arms can be mounted in any angular position.

LIMIT SWITCHES — *Micro Switch, Div Minneapolis-Honeywell Regulator Co, Freeport, Ill.* 101ML1 precision, two-circuit switch uses snap-action spring. Two-circuit double-break basic switch ITBI-1 for reversing circuit applications.

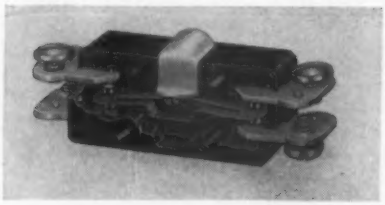
SWITCHES — *Minneapolis-Honeywell Regulator Co, Micro Switch Div, Freeport, Ill.* Environment-proof series for use in exposed locations in aircraft; hermetically sealed, split-contact switching unit enclosed in aluminum housing.

LIMIT SWITCHES—*R B Denison Mfg Co, 102 St Clair Ave, NW, Cleveland 13.* Series L-100 heavy-duty switches provide 70% overtravel, without the use of cams, levers, or extra springs.

SWITCH—*General Electric Co, Schenectady, NY.* Manual starting and overload switch for fractional hp motors. Overload protection through nichrome heater.

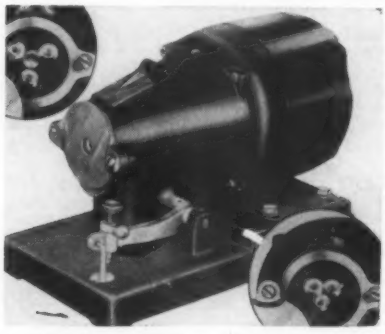


IMPULSE SWITCH — *Electro-Snap Switch & Mfg Co, 4218-30 West Lakes St, Chicago 24, Ill.* Snap-action switch incorporates one-way impulse action, eliminates need for time delay relays, complicated actuating dogs, and additional switches. There is a choice of five "on" periods, from 1/16 to ⅜ in.

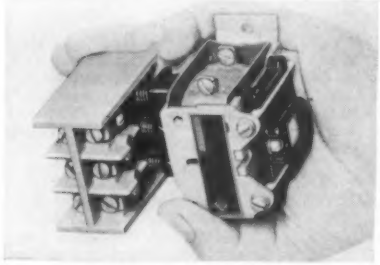


SNAP-ACTION SWITCH — *Electro-Snap Switch & Mfg Co, 4218-30 W Lake St, Chicago, Ill.* Limit control, safety, and interlock applications. 24 different models include 8 re-set switch models.

LIMIT SWITCH—*Electro-Snap Switch & Mfg, Co, 4218-30 W Lake St, Chicago.* Hermetically sealed for high resistance to extreme heat and sub-zero cold. Electrical rating is 10 amp.



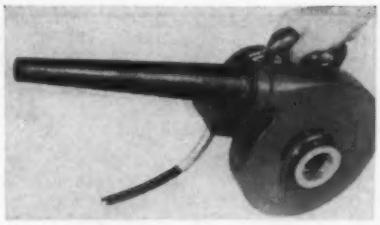
WIRE STRIPPER—*High Speed Hammer Co, Inc, Rochester, NY.* Triple-disk cutting mechanism automatically centers the wire it strips of insulation and provides its own extra cutting edges.



MAGNETIC CONTACTOR — *Furnas Electric Co, 1044 McKee St, Batavia, Ill.* Little Giant; rated at 5 hp; 2, 3, and 4 poles Wide contact gap, 21/64 in., aids in preventing flashover in reversing contactors.

MAGNETIC TAPE HANDLER—*Potter Instrument Co, Inc, 115 Cutter Mill Road, Great Neck, NY.* Model 902 digital tape handler will start and stop in time of 5 milliseconds and tape speeds up to 60 ips. Choice of 30/15 and 60/15 ips dual speeds with ¼, ½, and ⅝-in. tape is provided.

TRANSFORMERS — *General Electric Co, Schenectady 5.* Line of transformers offers 100 combinations of ratings and accessories. Accessory connections are incorporated directly in basic unit. 8 ratings, from 50 to 1500 v-amps; for each rating there is domestic unit for 60 c, 230/460 v primary, 115 v secondary; and combination domestic, export unit for 50/60 c, 230/460/575 v primary, 115/95 v secondary.



PORTABLE BLOWER — *The Ace Co, P O Box 1212, Ocala, Fla.* Cleans motors, machines, and switchboards. Model NA, features heavier duty 1-hp motor without increase in weight.

WIRE CONNECTOR — *Ideal Industries, Inc, 1057 Park Ave, Sycamore, Ill.* With one-piece molded plastic threads and body; designed for low-cost connections of Nos. 14, 16, and 18 wires, available in two sizes. Units withstand temps to 400 F.

CONVERTERS — *Remington - Rand, Inc, 315 Fourth Ave, New York 10, NY.* Machines provide automatic transfer of data from punched cards into perforated tape and from tape into cards.

PROCESS TIMER — *General Electric Co, Instrument Dept, Schenectady 5, NY.* TSA-21 controls simultaneous closing of one circuit and opening of another.

ARMORED TUBES — *Crescent Insulated Wire & Cable Co, Trenton, NJ.* Twisted together, said to bend without distortion; tubes are protected by flexible galvanized housing.

DEMAGNETIZER—*L-W Chuck Co, Toledo 4, O.* Coil with 3¾-in. opening has pushbutton control to provide or remove magnetism.

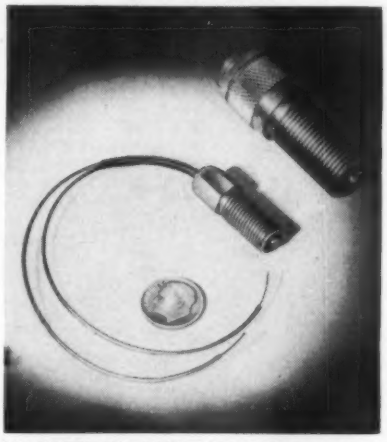
SILVER CABLE—*Anaconda Wire & Cable Co, Hastings-on-Hudson, NY.* Installation of non-metallic-sheathed cable has reportedly been made easier by smoother surface on Anaconda's Silver Dutrax.

INDICATING LIGHTS—*General Electric Co, Schenectady, NY.* Six colors, for front or back mounting, in three forms—resistor, transformer, and full-voltage.

PHENOLIC WIRING DUCT—*Stahlin Bros Fibre Works, Belding, Mich.* Side angles are furnished in 2- and 3-in. heights; covers and clips in 1-, 1½-, 2- and 3-in. switch; side angles and covers in 3- and 4-ft lengths.

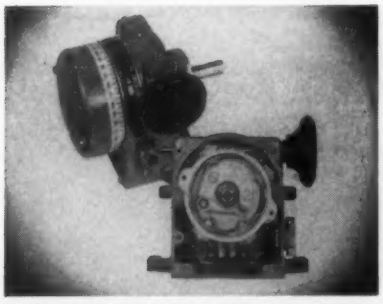
BATTERY—*Gould-National Batteries, Inc, St Paul, Minn.* Dry-charge electric storage unit retains initial charge longer than previously possible, particularly under adverse temperature and moisture conditions.

ELECTRONIC TELEPHONE—*Fonadek, Div Special Devices, Inc, Boston, Mass.* Fonadek holds telephone and frees hand to enable one to leave desk and still converse. Price is $59.95.

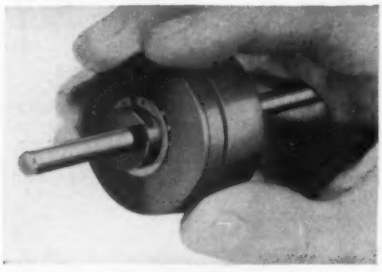


MAGNETIC PICKUP—*Electro Products Laboratories, Inc, Chicago 40, Ill.* Counting, speed, sequence, or position are indicated by miniature head, Model 3015, that produces ac voltage without contact with metal.

ROTATION TESTER—*James G Biddle Co, 1316 Arch St, Philadelphia 7.* Instrument determines direction of rotation of motors before energizing, also determines phase rotation or sequence of energized power circuits. Other uses are for showing polarity of transformers and testing continuity of electrical circuits.



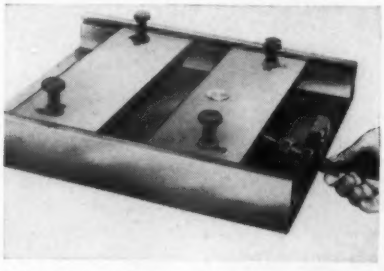
CO-ORDINATOR — *Farmer Electric Co, 21 Mossfield Rd, Waban, Mass.* For coordinating angular position of rotating shaft and opening or closing of electrical circuit. Incorporates cam-operated, s-p, s-t switch externally adjusted through 360°.



ELECTRIC BRAKES, CLUTCHES — *Warner Electric Brake and Clutch Co, Beloit, Wis.* Compact electric brakes, clutches, aand clutch-couplings for accurate control of load torque drive. Brakes have two parts, rotating armature and stationary field with replaceable face. Clutches and clutch-couplings have three parts, a stationary field, rotor, and armature.

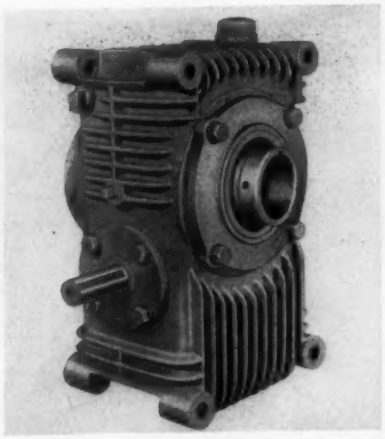
SERVO VALVES — *Moog Valve Co, Inc, East Aurora, NY.* Control max output flow from 0.5 to 8.0 gpm in hydraulic systems from 1000 to 3000 psi. Model 500 valves have first-stage push-pull hydraulic amplifier which requires continuous oil flow of 0.1 gpm.

POWER PLUG — *Automatic & Precision Mfg Co, 252 Hawthorne Ave, Yonkers 5, NY.* Armored connector No. 920 meets specification MIL-C-3767 and consists of standard plug to which removable third blade has been added.

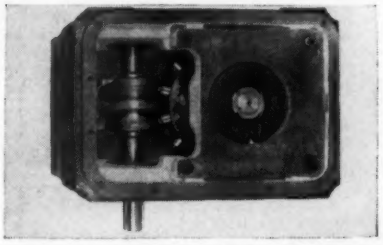


MOTOR BASE—*T B Wood's Sons Co, Chambersburg, Pa.* Quick slide, provides for releasing adjusting screw permitting motor to be moved freely after base is bolted down.

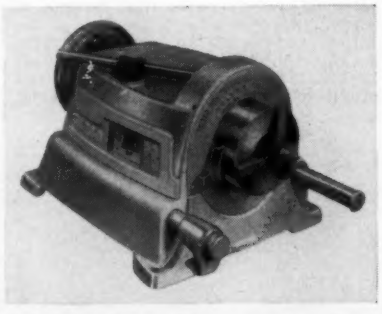
V-BELT—*Manhattan Rubber Div, Raybestos-Manhattan, Inc, Passaic, NJ.* Reinforced with synthetic fiber; fewer sheaves needed for same power transmission.



SPEED REDUCERS — *Cone-Drive Gears, Div Michigan Tool Co, 7171 East McNichols Rd, Detroit 12.* Shaft-mounted units with double-enveloping worm gearing in sizes 2, 2½ and 3-in. center distance; can be furnished in pinion-under, pinion-over or vertical-shaft models.

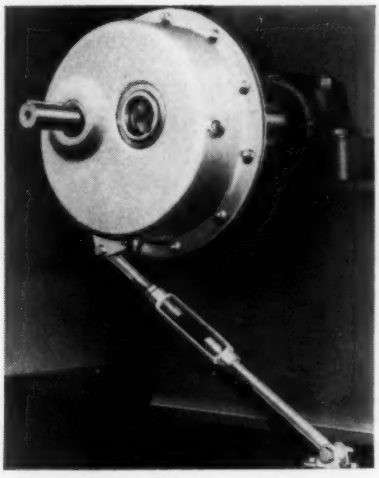


ROLLER GEAR DRIVES — *Roller Gear Div, Ferguson Machine and Tool Co, Box 191, St Louis 21, Mo.* Completely housed units in range of standard and semi-standard models. They offer selective assembly for any combination of directions of rotation, and for location of shaft extensions.



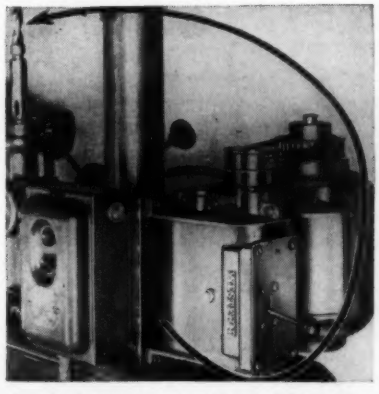
POWER DRIVE—*Toledo Pipe Threading Machine Co, Toledo, Ohio.* Operation of hand pipe threaders, cutters, and reamers; converts hand tools to power. Aluminum housing reduces weight to 140 lb. Capacity: ⅛ to 2-in. pipe, ¼ to 1½-in. bolts; with universal drive shaft, geared dies, stocks and cutters up to 12 in.

ADJUSTABLE V-BELT — *Manheim Manufacturing & Belting Co, Manheim, Pa.* TD and TE link V-belts are made of plies of specially treated high-tensile-strength canvas duck, joined by riveted studs with removable cupwashers and T-screws.

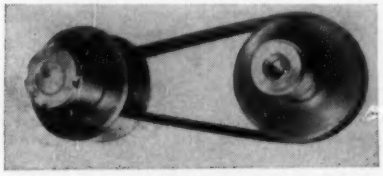


SPEED REDUCER—*The Falk Corp, Milwaukee, Wis.* Mounts directly on shaft; requires no floor space other than for motor and tie rod connection. Selection of output speed between 14 and 420 rpm; six sizes cover range from ½ to 30 hp.

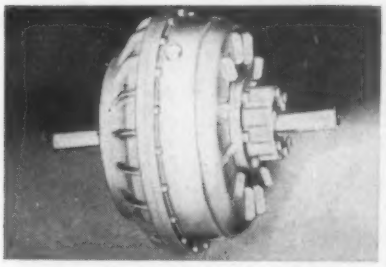
POWER UNIT — *Cushman Motor Works, Inc, Lincoln, Neb.* Model M, 6-hp, single-cylinder, four-cycle air-cooled engine has automotive or straight-line drive clutch and directly attached three-speed and reverse transmission.



FOUR-SPEED TRANSMISSION — *Western Mfg Co, 3400 Scotten Ave, Detroit 10, Mich.* One-hp capacity, 4-speed transmission uses Gilmer timing belts and pulleys, requires no lubrication, and can be used in vertical, angular, or horizontal position.

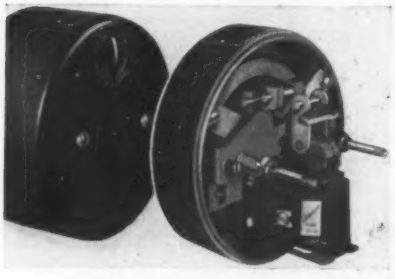


STEPLESS SPEED VARIATOR — *Gubelin International Corp, 35 W 53 St, New York 19, NY.* Icor is a single pulley unit mounted directly on the motor shaft; provides a driving range of 4 to 1, infinitely variable. Design includes control device that keeps both halves of pulley continuously and exactly centered with belt centerline.



DRIVE—*Twin Disc Clutch Co, Dept DS, Racine, Wis.* Hydro-Wind Models 12.2 and 8.4 have automatic winding and tensioning control. Improved features include rearrangement of gear train, better bearing spacing, and carbon-against-Meehanite spring-loaded seal.

VARIABLE PITCH PULLEY — *Gerbing Mfg Corp, Northbrook, Ill.* For blowers, conveyors; maximum horsepower rating is 1/3 at 1750 rpm.

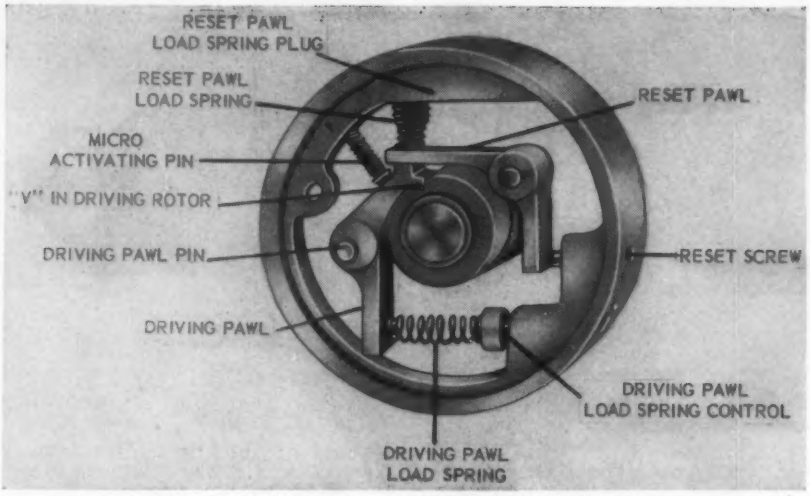


MAGNETIC BRAKES—*Stearns Magnetic Inc, Milwaukee 46, Wis.* 40 Series meets NEMA frame standards and 1/20 to 1/3 hp range. 50 Series is for 1/6 through 2-hp range.

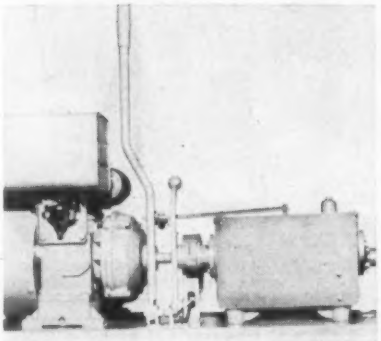
SHAFT COUPLING—*The Medart Co, 3535 DeKalb St., St. Louis 18, Mo.* Uses basic Sleevlock principle of split bushing and tapered bore. Couplings are now available in six sizes for shafts from ¾ to 6 in. dia.

BRAKE VENTILATION—*Linderman Devices, Inc, Newburgh, NY.* Controlled forced air cooling for Series No. 460 self-contained or built-in type. High-velocity, low-pressure air lowers brake drum and lining temperature.

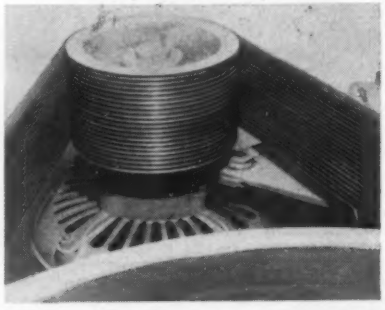
CLUTCH—*Salsbury Corp, 1161 E Florence Ave, Los Angeles, Calif.* 600 Series automatic unit for gasoline engines from 3 to 10 hp, with 1-in. and 1 1/8-in.-dia shaft extensions, and on electric motors from 2 to 5 hp, 1750 rpm.



VARIABLE-SPEED DRIVE—*Speed Selector Inc 118-U Noble Court, Cleveland 13.* Insures full load-carrying capacity throughout 9 to 1 speed range, uses standard V-belts in 4-in., ¾-hp, and 6-in., 1½-hp sizes. Belt alignment is maintained by sliding sheave.

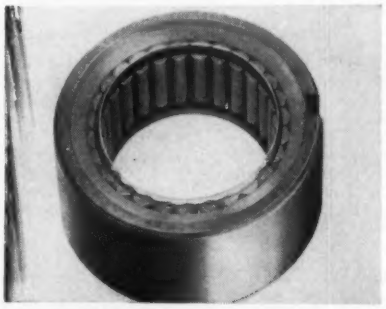


POWER TRANSMISSION — *Soilaire Industries, 1200 Second Ave S, Minneapolis, Minn.* Incorporates Briggs & Stratton 5-hp engine with 6 to 1 reduction connected to oil-tight transmission contanling two Maxitorq disk clutches. The transmission is a 2 to 1 reduction, has brake and shifting lever.

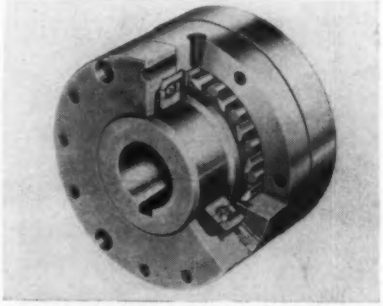


V-BELT DRIVE—*Manhattan Rubber Div, Raybestos-Manhattan, Inc, Passaic, NJ.* Poly-V drive is single endless belt with parallel V-ribs molded lengthwise around inside circumference. Sheave grooves are designed to mate with belt ribs, and drive is said to give 50% greater horsepower than multiple V-belts of same width, or equal horsepower with 1/3 less width. Belt matching problems are avoided.

TORQUE-LIMITING CLUTCH — *Centric Clutch Co, Route 9, Woodbridge, NJ.* Trig-O-Matic features trigger action; speeds as low as 1 rpm. Operation centers about two pawls, each held in place by separate springs. Compression is controlled by screw and plug of each.

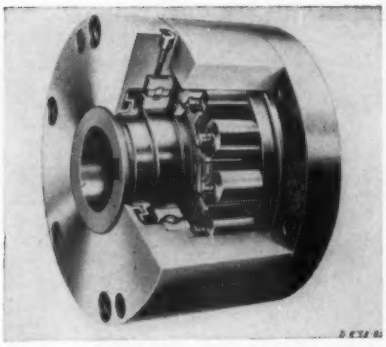


CAM CLUTCH UNITS—*Morse Chain Co, 7601 Central Ave, Detroit 10, Mich.* Backstop, indexing, and overrunning clutches. 200 Series units are made with OD dimensions and tolerances corresponding to seven sizes of standard 200 Series ball bearings.

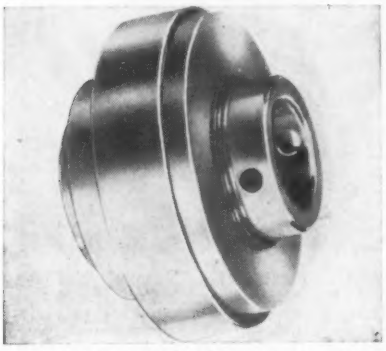


CAM CLUTCHES — *Morse Chain Co, 7601 Central Ave, Detroit 10.* Applications of MC Series with alternate low-wedge-angle cam and roller construction, include high speed over-running and backstop, as well as heavy-duty indexing.

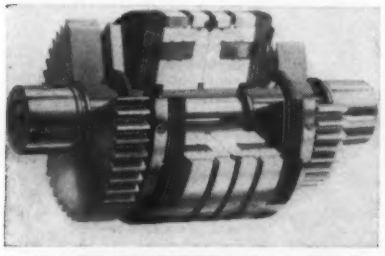
TORQUE LIMITERS — *Morse Chain Co, 7601 Central Ave, Detroit 10.* For variety of machine drives. 11 standard models give max torque capacities from 20 to 620 ft-lb.



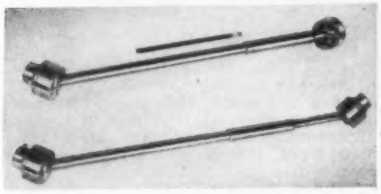
CAM CLUTCH—*Morse Chain Co, 7601 Central Ave, Detroit 10.* Series K ball-bearing, over-running clutches have toothed inner race driving member that actuates closely spaced, independently sprung cams. Drive capacities are 1300 to 6000 ft-lb; sizes 8¾, 10, 12, and 15 in. OD.



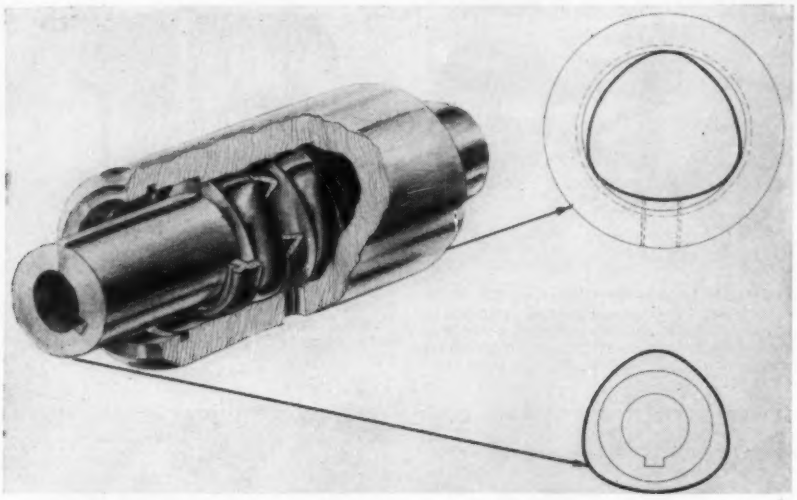
MINIATURE CLUTCH — *The Formsprag Co, 2361 Hoover Rd, Van Dyke, Mich.* For over-running, backstopping, and indexing; includes four models with all features of full complement sprag principle. Standard bore sizes are ¼, ⅜, and ½ in.



ELECTROMAGNETIC CLUTCH—*I-T-E Circuit Breaker Co, 1900 Hamilton St, Philadelphia 30, Pa.* To fit transmissions using constant mesh gearing. Clutch controlled by 24-v dc circuit; no field adjustment of torque can be made.

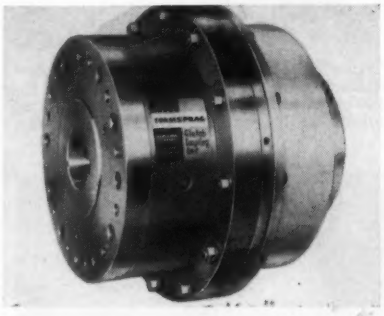


UNIVERSAL JOINT—*Joint Div, The Gear Grinding Machine Co, 3901 Christopher, Detroit 21.* Embodies all Rzeppa constant velocity features, compactness, ruggedness, uniform flow of power, minimum weight and long life.

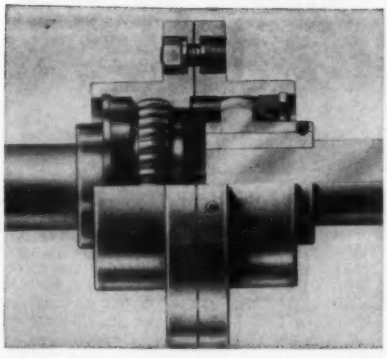


CLUTCHES—*Formsprag Co, 23601 Hoover Rd, Van Dyke, Mich.* Sizes to 12 in. for over-running, indexing, and backstopping.

CHAIN COUPLINGS—*Browning Manufacturing Co, Mayville, Ky.* Take Browning split-taper compression bushings; sizes and capacities to 150 hp.

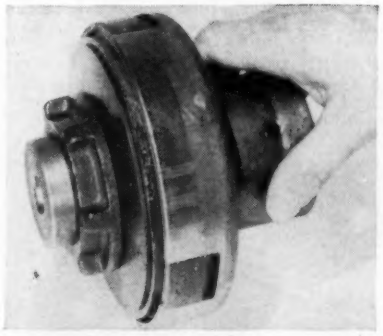


CLUTCH COUPLER—*Formsprag Co, 23601 Hoover Rd, Van Dyke, Mich.* Unit for applications needing over-running with flexible coupling. Two types: low-speed over-running, and high-speed over-running.

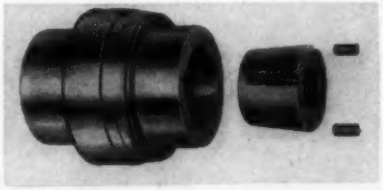


COUPLING — *Philadelphia Gear Works, Erie Ave & G St, Philadelphia 4.* Male teeth of each coupling half are cut on spherical arc; internal teeth cut with straight root. When misalignment occurs, curved teeth maintain constant arc of contact. Sizes 0 through 6 (max bore 6⅝ in.)

UNIVERSAL COUPLING—*Kerns Mfg Corp, 48-15 Court Square, Dept 196, Long Island City 1, NY.* Equilateral tri-lobe shape on driving members, has high torsional strength and angular displacement; 15% higher load-carrying capacity; provides 8° angular rotational displacement and bearing contact which is 85% of total driving area displacement.



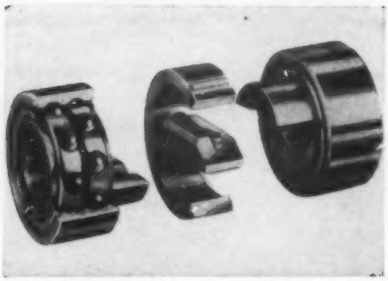
COUPLING UNITS—*Morse Chain Co, 7601 Central Ave, Detroit 10, Mich.* Torque-Limiter units provide overload protection for a wide variety of machinery drives with direct-connected shafts.



COUPLINGS—*Flexible Coupling Co, 4878 W Lake St, Chicago 44, Ill.* For use with Dodge taper-lock bushings C-191 for bores ½ to 2 in.; C-226 and C-276 for ½ to 2½-in. bores.

CASTING REPAIR PLUGS—*US Plug & Fitting Co, Wellington, Ohio.* Square head solid, square head long, square knockoff head; in sizes 1/16 to ½ in.

PRECISION GEARS—*Dynamic Gear Co, Inc, Amityville, LI, NY.* Packed in kits in three different kit sizes.



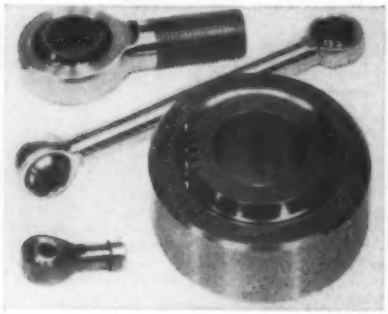
COUPLING—*Ahlberg Bearing Co, 3025 W 47th St, Chicago.* NOBAK transmits torque in both clockwise and counter-clockwise rotation and can be used to lock driven mechanism in any angular position.

PILLOW-BLOCK BEARINGS—*Congress Drives Div, Tann Corp, 3750 E Outer Drive, Detroit 34.* Oil metering principle through Permawick, said to hold 9 times its weight of oil. Light- and medium-duty models, with ½ to 1¼-in. bores.

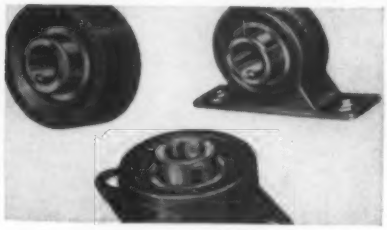
WASHERS — *Lucas-Milhaupt Engineering Co, Cudahy, Wis.* L-M washers edgewound from flat wire. Eliminate blanking scrap losses; said to reduce silver brazing costs as much as 60%.

CHROME STEEL BALLS—*Landis & Gyr, Inc, 45 W 45th St, New York 36, NY.* 15 sizes, from 0.013780 to 0.088583 in. Sphericity tolerance of 0.000008 in. max, diameter tolerance per unit ± 0.000012 in.

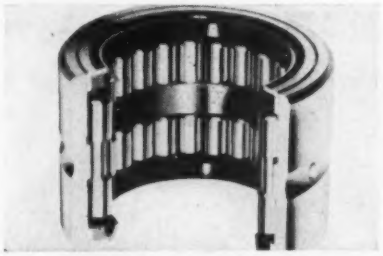
SPRING PIN—*Elastic Stop Nut Corp of America, Union, NJ.* Said to withstand 100-hr salt spray test for corrosion and meet AMS 7207.



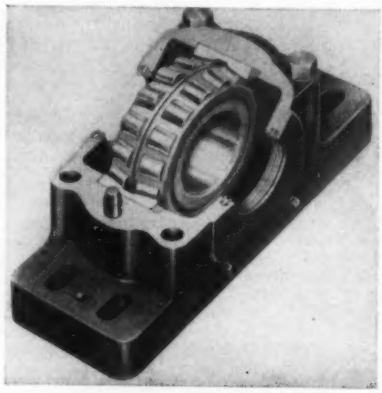
SPHERICAL BEARING—*Delron Co, Bearing Div, 5224 Southern Ave, South Gate, Calif.* Adaptable where severe operating conditions require special materials, high-temperature resistance, and heavy load-carrying ability.



BALL BEARING UNITS—*Sealmaster Div, Stephens-Adamson Mfg Co, Aurora, Ill.* In rubber mountings with pressed steel housings. Six shaft sizes range from ½ to 1 in. Zone-hardening used on inner race ring heat-treats through ball path section only.



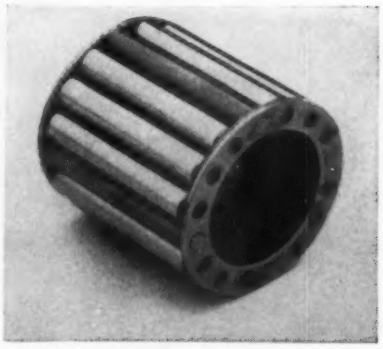
SEALED BEARINGS—*McGill Mfg Co, Inc, Valparaiso, Ind.* Seal consists of metal stamping with rubber rind bonded to one side—it is located in outer race bore by means of heavy press fit.



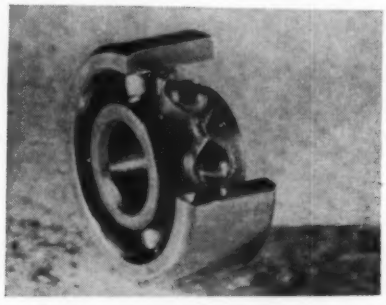
MILL BEARINGS—*Link Belt Co, 307 N Michigan Ave, Chicago 1,* Line includes pillow blocks with self-aligning roller bearings for press fit on shafts.

THRUST ROLLER BEARINGS—*Rollway Bearing Co, Inc, 543 Seymour St, Syracuse, NY.* Type T-21906 supports a vertical thrust load of 380,000 lb at 16 rpm and has a rated capacity of 700,000 lb. The roller is 3¾ in. thick, has 25¾-in. OD and 17-in. ID.

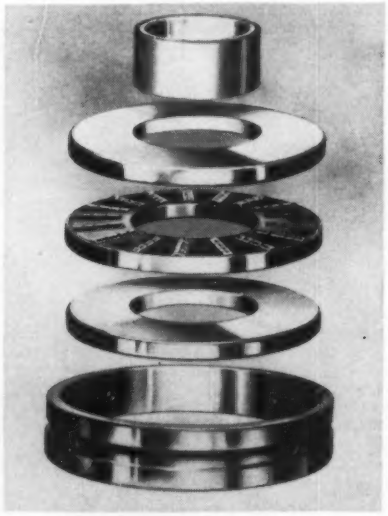
TELESCOPING SLEEVES—*A&A Mfg Co, 2017 West Clybourn St, Milwaukee 3, Wis.* Minimum close-down length through controlled convolution diameters. If necessary two, three, or more weights of the neoprene base material may be used to obtain specified operating characteristics. For high-speed flexing, 0.033-in. materials are used.



ROLLER BEARING—*Roller Bearing Co, Inc, Dept STC, Syracuse, NY.* Steel-cage roller bearing is self-contained, can be used without inner or outer race.



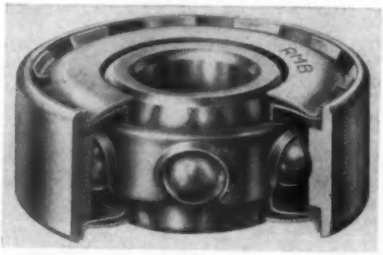
BALL BEARING — *New Hampshire Ball Bearings, Inc, Peterboro, NH.* Micro R2 features a ribbon-type, balanced, cone-controlled retainer. New retainer is stronger and has higher speed limits than the old crown version; it has been tested at 90,000 rpm.



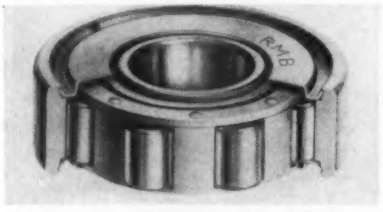
THRUST ROLLER BEARING—*Rollway Bearing Co, Seymour St, Syracuse, NY.* Has one-piece high-tensile sleeve of cast iron. Type SDT is used in worm gear assemblies or reducers, or where direction of thrust is frequently reversed. Capacities at 10 rpm are 10,750 to 1,170,000 lb.

PLASTIC WHEEL—*Hamilton Caster & Mfg Co, 1700 Dixie Highway, Hamilton, Ohio.* 2000-lb capacity; floor-protective, noiseless, non-sparking, and shock-absorbent. Roller bearings, with Zerk lubrication fittings.

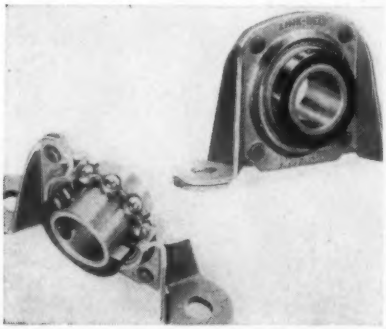
NYLON BEARING—*Thomson Industries, Inc, Engineering Dept, Manhasset, NY.* Flanged Nyloner can be provided with anti-rotation boss or lug under the flange which engages a notch or slot in the bearing housing.



MINIATURE BALL BEARINGS — *Landis & Gyr, Inc, 45 W 45th St, New York 36, NY.* R-2 size with 0.3750-in. OD; 0.1250-in. bore; 0.1562-in. width. Can be furnished in two basic constructions and ten different types.



MINIATURE ROLLER BEARINGS—*Landis & Gyr, Inc, 45 West 45th St, New York 36, NY.* Available in three types and seven sizes from 0.4724 to 1.0236-in. OD. Suitable for use in machines and motors where shafts are subjected to heavy radial loads. All types permit axial displacement of the shaft.

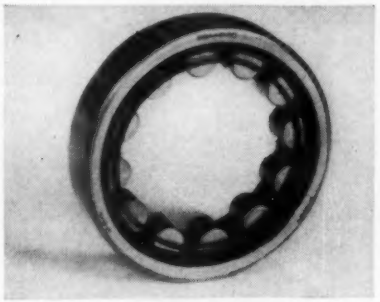


PILLOW BLOCKS—*Link-Belt Co, Chicago 1.* Shaft sizes from ⅝ to 1¼ in. Pressed-steel housings, self-aligning ball bearings, low speed, light load.

GUIDE PIN BUSHING—*Allied Products Corp, Richard Bros Div, 1560 East Milwaukee Ave, Detroit 11, Mich.* R-B powdered-steel-alloy bushing is heat-treated and has sealed internal oil wells as an integral part.

PILLOW BLOCKS—*Randall Graphite Bearings, Inc, 1000 South Greenlawn Ave, Lima, Ohio.* Made by forming steel to spherical shape. Either graphited-bronze bushings or sintered-bronze bushings in sizes from ½ to 1 in.

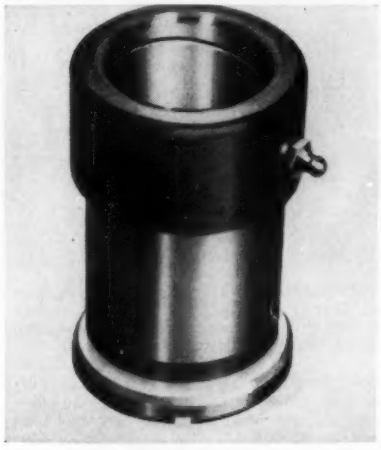
BUSHINGS—*W F Meyers Co, Inc, Bedford, Ind.* Meyco carbide inserted drill jig busings for tough drill problems are available in headless press fit, head press fit, slip, and fixed renewable types, as well as in special specifications.



ROLLER BEARING — *Rollway Bearing Co, 542 Seymour St, Syracuse, NY.* Steel-cage cylindrical roller bearing with or without separable inner race. Assembly consists of an outer race, roller retainer, and rollers. The ID of the outer race has accurately machined ring grooves into which heavy L-section snap rings fit.

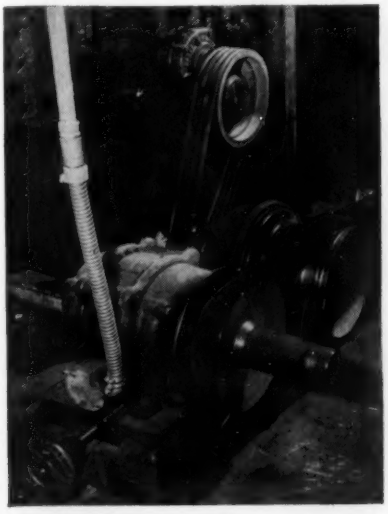
LIVE BUSHINGS—*J G Jergens Co, 11106 Avon Ave, Cleveland, Ohio.* Roller bearings live bushings replace bronze bearings in column supports of boring mills.

SHAFT COLLARS—*Rockwood Pulley Mfg Co, 20 Crosby St, New York 13.* Solid steel and stainless; cadmium-plated with zinc alloy to permit welding when necessary. Bore sizes from ⅛ to 3 in.



GUIDE BUSHINGS—*Lamina Dies & Tools, Inc, 14925 W Eleven Mile Road, Berkley, Mich.* Made of hardened steel with 0.002 to 0.004 in. of bronze electroplated on inside dia.

CONTROL KNOB—*Industrial Devices, Edgewater, NJ.* Nylon; Eliminates need of metal bushing. Model 1431, fits shaft to ¼-in. dia.

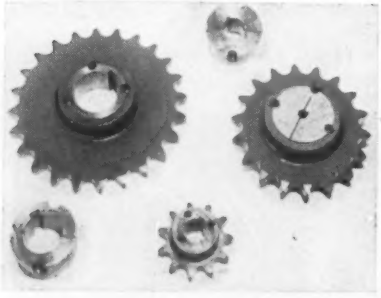


WINDING & TENSIONING CONTROL—*Twin Disc Clutch Co, Dept DS, Racine, Wis.* Hydro-Wind Drive automatic control incorporates fluid coupling and planetary gear set. Automatic slip of fluid coupling reacts with planetary gear set.

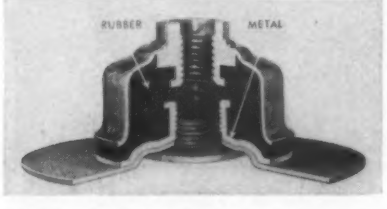
TWO-HAND TRIP—*Benchmaster Mfg Co, Gardena, Calif.* Electronic safety clutch requires operator to use both hands before solenoid will work.

CLEVIS PINS—*Marvel Industries, Inc, Sturgis, Mich.* Demountable snap-in pins in types and sizes up to those used on 25-ton stabilizing jacks.

RETAINING RING—*Waldes Kohinoor, Inc, Long Island City.* Radially applied, and can be locked in groove and used as shoulder against rotating parts. Truarc Series 5139, for shaft sizes from ⅛ to ½-in. diameter. Shear strength is 500 lb for smallest size, 2500 lb for largest.



ROLLER CHAIN SPROCKETS — *Morse Chain Co, 7601 Central Ave, Detroit 10.* Taper-Lock single and double hub types up to 26 teeth for 1½, 1¾ and 2-in. pitch chain. 54 bore sizes.



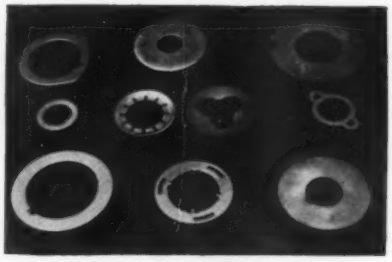
VIBRATION DAMPENERS —*J & H Products Co, 3007 Elm St, Dallas 1, Texas.* Units for right-angle-head grinders, air or electric, are designed for use with raised-hub disk wheels, abrasive disks, and cup wheels.

SPLICING DEVICE—*Jones & Laughlin Steel Corp, 3 Gateway Center, Pittsburgh 30.* Clamp or sleeve is squeezed around wire rope in special 300-ton hydraulic press. JalKlamp splices eyes, with or without thimbles, in ends.

CABLE SLACK COMPENSATOR — *E H Stau Co, 351 N Atlantic Blvd, Los Angeles, Calif.* Also anchor nut holder for positioning and holding anchor nut plates.

BAR HANGER—*Raco Div, All-Steel Equipment Co, Inc, Aurora, Ill.* Adjustable through telescoping action. Clip provides added wiring room in multiple-device units.

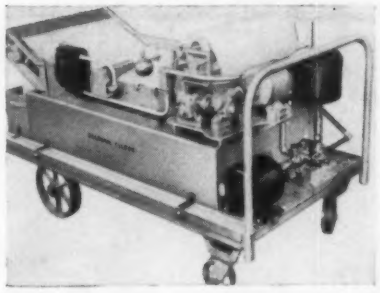
TAPER-LOCK SPROCKETS—*Dodge Mfg Corp, Mishawaka, Ind.* Includes 1½, 1¾, and 2-in. pitch sizes; sprockets and bushings for chain sizes from 40 through 160. No flanges or protruding parts, mount on shafts quickly and easily.



DIE-CUT WASHERS—*Dayton Rogers Manufacturing Co, 2824 13th Ave South, Minneapolis 7, Minn.* From bronze, bakelite, brass; sizes ⅛ to 20 in. produced with max blanking pressure of 295 tons.

STRAIGHT LINE STRAINER — *Industrial Sales Div, Hays Manufacturing Co, 814 W 12th St, Erie, Pa.* Protects appliances, equipment, valves, and controls. In ¼-, ⅜-, ¾-, and 1-in. pipe sizes.

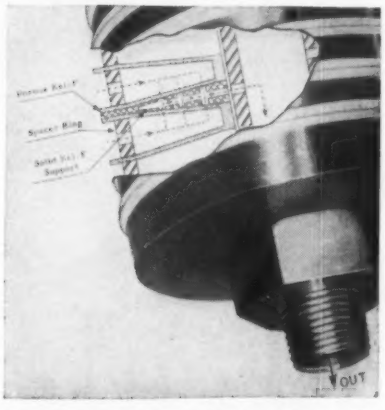
AIR FILTERS — *Commercial Filters Corp, 2 Main St, Melrose 76, Mass.* Model 4MA handles air and liquids, and Model 4M10 handles liquids at pressures up to 4000 psi. Units are all steel, made from a single tube.



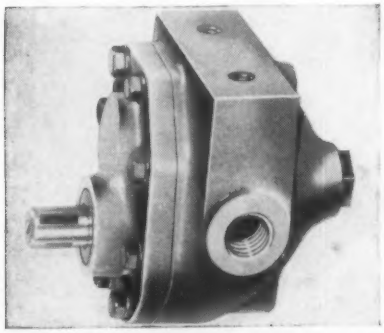
FILTRATION UNIT—*Industrial Filtration Co, Dept P-287, Lebanon, Ind.* Portable; incorporates Delpark disposable belt-type filter.

FILTER ELEMENTS—*Aircraft Porous Media, Inc, Glen Cove, NY.* Made of porous 316 stainless; used at temp of 600 F. Elements remove 2 to 22-micron-size particles.

PRESSURE FILTER — *Hydro-Blast Corp, 2550 North Western Ave, Chicago 47, Ill.* For dewatering granular materials. Operation is automatic, by electric timers.

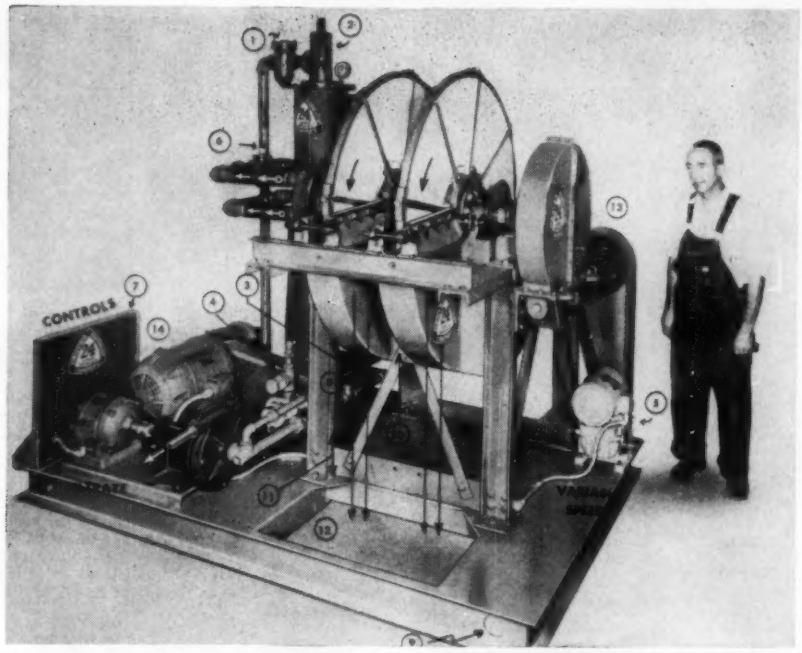


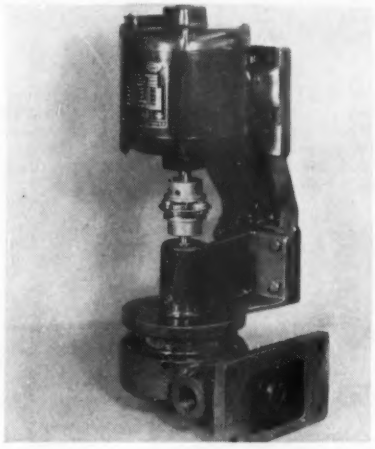
FILTER—*Porous Plastic Filter Co, Glen Cove, NY.* Filter medium is resistant to common acids and gases. The medium does not catalyze the decomposition hydrogen peroxide. Standard elements will remove all particles larger than five microns in liquid and finer particles in gas, can be used at temperatures up to 350 F.



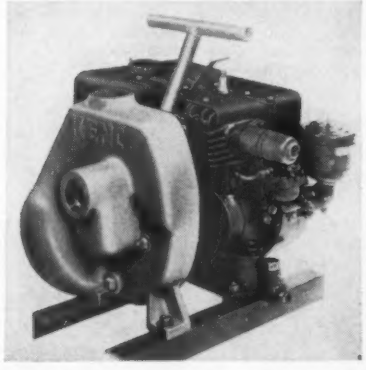
GEAR PUMP — *Pesco Products Div, Borg-Warner Corp, 24700 N Niles Rd, Bedford, Ohio.* For pressures to 2000 psi; capacity, 11 gpm at 2400 rpm. Intermittent or continuous duty to 150 F.

FILTER UNIT — *Denver Equipment Co, 1400 Seventeenth St, Denver 17, Colo.* All dewatering elements are located on one base. Uses wet vacuum pump. Spring-actuated float valve breaks vacuum seal if filtrate level gets too high; valve in balance line prevents vacuum from escaping through filtrate pump line.

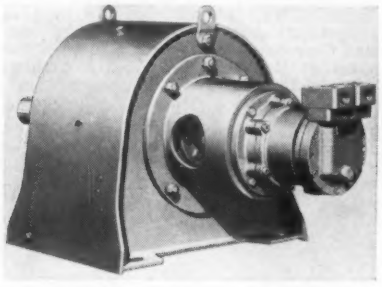




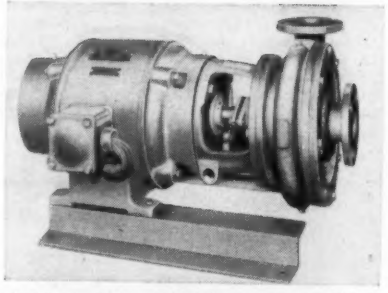
CENTRIFUGAL PUMP — *Pioneer Pump Div, Detroit Harvester Co, Detroit 28.* JIC standard are met by improved flange-mounting pumps of 1/20 to 5-hp size. Top rating is 174 gpm at free flow.



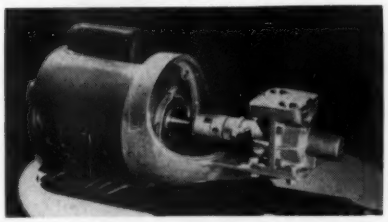
PORTABLE PUMP—*Kenco Pump Co, 1125 No Ridge Road, Lorain, Ohio.* No. 114 is completely self-priming, has no valves or moving parts other than motor, pump impeller, and seal. It delivers over 100 gpm at lowest head, and is capable of forcing water to maximum height of 100 ft. It is self-priming.



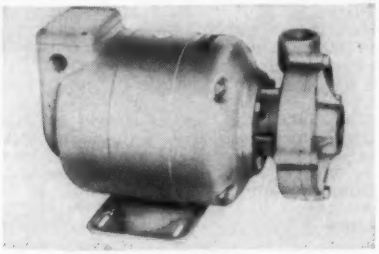
HYDRAULIC MOTORS—*The Oilgear Co, 1551 E, West Pierce St, Milwaukee 4, Wis.* Oilgear motors are flanged in coupling connected to Falk single, double, triple, and quadruple reducers with ratio combinations providing speeds from 1.7 to 1170 rpm.



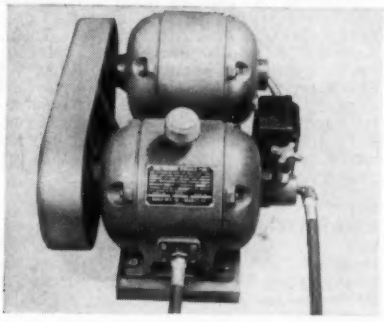
PUMPS AND UNITS—*Ampco Metal, Inc, Milwaukee 46, Wis.* Design gives choice of capacity from fractional to 600 gpm by selection of various "off-the-shelf" units which comprise the pump.



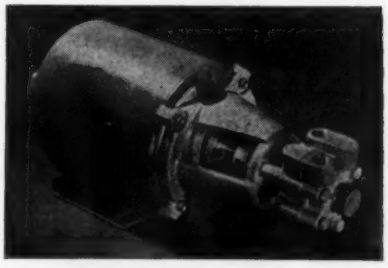
PUMP MOTOR—*Eco Engineering Co, 12 New York Ave, Newark 1, NJ.* Drives PP-2 pumps, has NEMA frame, positive-displacement, pressures to 150 psi, flow 10 gpm.



CENTRIFUGAL PUMP — *The Ruthman Machinery Co, Cincinnati, Ohio.* Direct-connected motor driven, adaptable to various air conditioning installations.



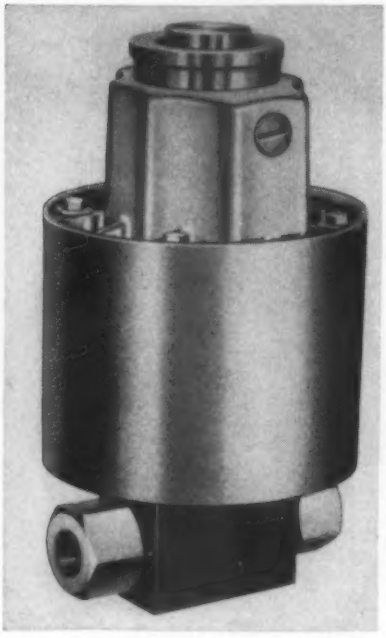
PUMP PACKAGE — *Manco Mfg Co, Bradley, Ill.* Series H delivers 2.04 gpm at 8,800 psi in intermittent operation. Six-piston wobble-plate type with operating speeds from 900 to 220 rpm displacing 57 cu-in. per rev.



PUMP-MOTOR UNIT—*Eco Engineering Co, 12 New York Ave, Newark, NJ.* Requires no outboard support and no special alignment. Pump is a standard, positive-displacement unit with two opposed, axially-oscillating impellers. Unit has pressures to 150 psi; various capacities up to 10 gpm.

PUMPS—*Vanton Pump & Equipment Corp, Empire State Bldg, New York 1.* V Series of flex-i-liners has housings made of unplasticized rigid polyvinyl chloride, said to have excellent chemical resistance, inherent strength, lightweight.

PARTS and MATERIALS—hydraulic

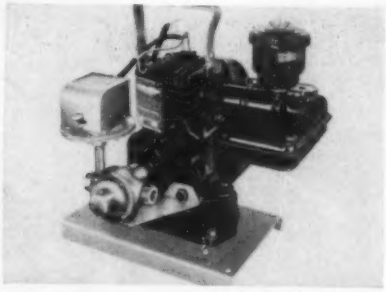


AIR-OPERATED PUMP — *Southern California Hydraulic Engineering Corp, 6318 S Central Ave, Los Angeles 1, Calif.* Automatic pilot-operated air selector valve eliminates stalling. Model 10-302 operates on principle of differential areas. Design permits oil or water to be used for testing or powering. Pressure outputs range from 0 to 30,000 psi when operating on 80-psi maximum air pressure.

GEAR PUMP—*Eclipse Fuel Engineering Co, Rockford, Ill.* Eclipse EO handles light liquids at 1725 gpm, to heavy oils at slower rates. Permits pressures to 100 psi.

CENTRIFUGAL PUMP—*The Fostoria Pressed Steel Corp, Fostoria, Ohio.* Driven by rotating magnetic field which eliminates the need for a shaft seal. Fractional horsepower sizes.

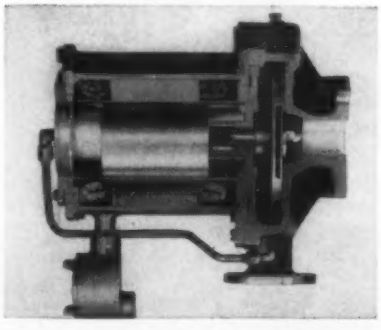
HYDRAULIC PUMPING UNIT — *Modernair Corp, 400 Preda St, San Leandro, Calif.* For use with Modernair components and systems. Price is $159.50 complete with motor, 5-gal. reservoir, breather, dipstick, overload protection and capacitor, relief valve set for 200 psi, and needle bearings.



GASOLINE ENGINE PUMP — *Hypro Engineering, Inc, Dept KP, 404 No Washington Ave, Minneapolis 1, Minn.* Model G 3800 VS mounts directly on drive shaft of model 5S 1-hp Briggs & Stratton gasoline engine and runs for 1¾ hrs on tank of fuel. Capacity of pump is 8 gpm; pressure range to 30 lb.

CENTRIFUGAL PUMP — *Chempump Corp, 1300 E Mermaid Lane, Philadelphia 18, Pa.* Chempump is a totally enclosed pump with no mechanical shaft-seal or stuffing box. Unit is self-lubricating. Basis of design is enclosed rotor impeller.

CENTRIFUGAL PUMP—*The Gorman Rupp Co, 305 Bowman St, Mansfield, Ohio.* Vertical self-priming pump features new cartridge design which permits removal of pump element without breaking piping. Equipped with explosion-proof NEMA type-C flange motors.



CENTRIFUGAL PUMP — *Chempump Corp, Sta A, 1300 E Mermaid Lane, Philadelphia 18.* Totally enclosed cam-rotor pump combines motor and pump in one unit. Sizes from ⅛ to 3 hp, capacities to 180 gpm, heads to 90 ft, temperatures to 450 F, pressures to 150 psi.

VARIABLE - DELIVERY F E E D PUMPS—*The Oilgear Co, 1560 W Pierce St, Milwaukee 4.* Max feed pressure is 1000 psi; max traverse pressure is 300 psi. Dual direct-solenoid-actuated control valves.

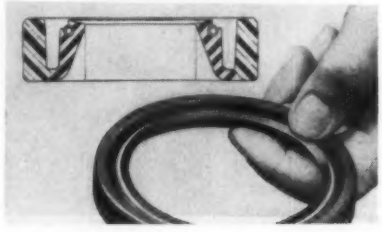
MAGNETIC PUMP—*Fostoria Pressed Steel Corp, Fostoria, Ohio.* For circulator applications; has no shaft seal or motor bearings requiring service. Compact unit gives heads of 24 ft. Adaptable to fresh or closed water systems.

CONDENSATE PUMP — *Samuel S Gelber Co, 162 N Clinton St, Chicago 6, Ill.* Measures 5x8x5 in.; develops 4 psi; discharges 180 gph at 1-ft head.

SEALER — *Crane Packing Co, Dept AMN, 1800 Cuyler Ave, Chicago 13, Ill.* Plastic lead seal pipe thread and gasket sealing compound. Withstands pressures to 6000 psi, temps to 500 F.

O-RINGS—*Bacon Industries, 192 Pleasant St, Watertown, Mass.* Silicone rubber; Kel-F coated; resistance to aromatic, chlorinated, or other solvents that normally attack silicone rubber. Temp, —120 F to +390 F.

SEALING TAPE—*Presstite Engineering Co, 3798 Chouteau Ave, St Louis 10, Mo.* High resistance to water, oil, gasoline, and aromatic fuels; low temperature flexibility. Extruded in tape (0.020 in.) and beads (⅛-in. dia).



MOLDED OIL SEALS — *Johns-Manville, 22 E 40th St, New York 16, NY.* LPD Clipper Seal. LPD represents "Line-contact proportionate design." Line-contact refers to lip of seal which contacts shaft in thin line around circumference. Proportionate design refers to relationship between lip area and hinge area which stays same throughout range of flange widths and shaft sizes.

SEALS—*Bellofram Corp, 144 Moody St, Waltham, Mass.* Bellows and diaphragm principle long stroke, deep convolution, constant area diaphragm.

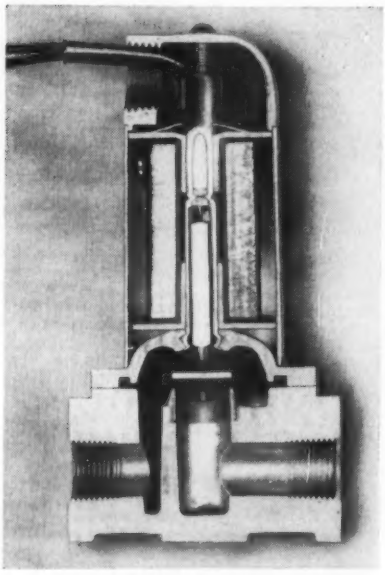
SEALING TAPE—*Presstite Engineering Co, 3798 Chouteau Ave, St Louis 10 Mo.* No. 161.1 moldable, flexible, with a string reinforcement core; adhesion on both sides. Retains shape and softness from –30 F to 200 F.

COMPOUND TAPE—*Presstite Engrg Co, 3798 Chouteau Ave, St Louis 10, Mo.* No. 163 has high compressibility for sealing small gage metal seams; in 1/32-in. thickness, and widths from ½ in. to 2 in.

COMPOUND TAPE—*Presstite Engrg Co, 3798 Chouteau Ave, St Louis 10, Mo.* Elastic, No. 162, extruded with reinforcement core of tobacco cloth; will not flow out when seams are bolted or riveted. Unaffected by temp through —30 to 180 F.

TUBE FITTINGS—*Dekoron Products Div, Samuel Moore & Co, Mantua, Ohio.* Fitting is delivered assembled with nut in body; tube is merely inserted into fitting body and nut tightened — this shears sleeve from end of nut and sleeve then attaches tightly to tube.

hydraulic—PARTS and MATERIALS



SOLENOID VALVES — *Eclipse Fuel Engineering Co, 1011 Buchanan St, Rockford, Ill.* Diaphragm operated for stand-by control of fluid flow and automatic cycling operations. Operate on line pressures as high as 150 psi and as low as ½ in. of water. Cycling range from 40 to 60 cpm.

SEQUENCE VALVES — *The Denison Engineering Co, 1160 Dublin Rd, Columbus 16, Ohio.* Line includes series of direct-operating sequence valves suitable for operations in circuits from 25 to 2,000 psi. This line is said to provide precision control for interlocked hydraulic operations and insure close synchronization of primary and secondary operations.

O-RINGS—*Stillman Rubber Co, Dept 3, 5811 Marilyn Ave, Culver City, Calif.* Made of Stillman synthetic rubber compounds; three stock sizes: 0.029x 0.040x0.109 in.; 0.070x0.040x0.150 in.; and 0.100x0.070x0.240 in. for moving or non-moving seals.

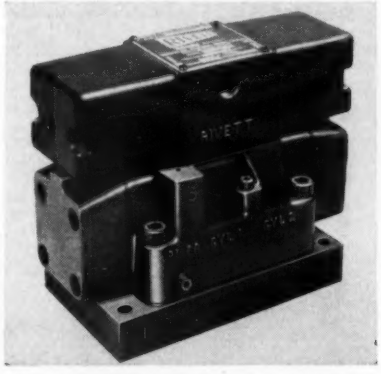
WATER SEAL—*Keystone Lubricating Co, 21st, Clearfield and Lippincott Sts, Philadelphia 32, Pa.* Soft plastic material for sealing pipe joints, screw threads, and gasket joints on lines handling water, air, ammonia, gas and steam.

ROD PACKING—*Flexrock Co, Packing Div, 3600-A Filbert St, Philadelphia 1.* For handling non-water soluble solvents. Style No. 181 for pumps, valves, and fittings, at temps up to 200 F; above 200 F, Style No. 1024.

SEALING COMPOUND—*Goshen Rubber Co, Goshen, Ind.* Development of Buna N has wide temperature range (–40 F to +325 F), and good oil resistance properties.

SEAT RINGS—*Cleveland Hard Facing, Inc, 3047 Stillson Ave, Cleveland 5.* Carbon, stainless, or tungsten die steels, hard faced at point of wear and impact with stellite overlays. In 1 to 14-in.-dia sizes.

O-RING SEALS—*Goshen Rubber Co, Inc, Goshen, Ind.* Compound 1120 to effect sealing of aviation-type fuels under pressure to 1500 psi over temp range from –65 to +160 F.



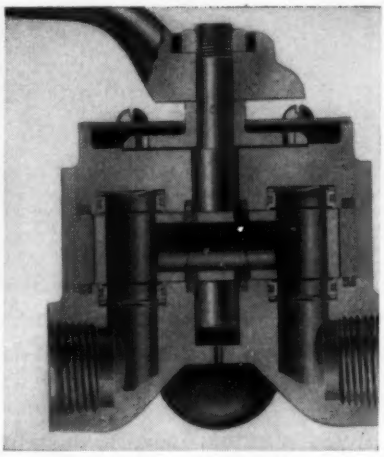
SOLENOID VALVE—*Rivett Lathe & Grinder, Inc, Brighton 35, Boston, Mass.* Has valve spool of scalloped design which opens or closes, gradually increasing or decreasing areas to the ports as spool is moved left or right. Series 6600 valve is for 3000-psi oil-hydraulic service and meets JIC requirements.

SEALING COMPOUND—*Flexrock Co, Packing Div, 3600-A-Filbert St, Philadelphia 1.* Flexrock 25, Teflon Pipe Dope for use on chrome, chrome plate, nickel steel, ceramic and plastic pipe threads, and for joining or connecting dissimilar materials.

HIGH-PRESSURE CUP PACKING — *Thiokol Chemical Corp, 780 N Clinton Ave, Trenton, NJ.* Thiokol liquid polymer impregnates leather used in cup packing. Packings perform under pressures of 0 to 15,000 psi and temperatures from –65 to +200 F.

SEALING TAPE—*Presstite Engineering Co, 3798 Chouteau Ave, St Louis 10, Mo.* No. 579.6 protects metals from corrosion, water, dust; will not swell rubber parts. Reportedly will not flow at 300 F, will not harden at –65F.

SOLENOID VALVE—*Skinner Electric Valve Div, Skinner Chuck Co, Edgewood Ave, New Britain, Conn.* For air, hydraulic oils; controls one double-acting cylinder or two single-acting cylinders. 176 variations of capacities, metering, and types.

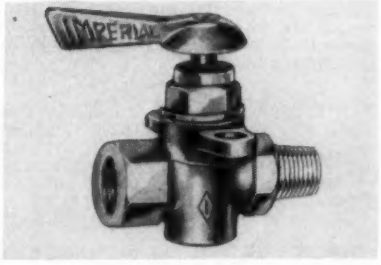


SELECTOR VALVE — *Republic Mfg Co, 1930 W 77th St, Cleveland 2, Ohio.* Pressures to 6000 psi. Consists of body, ported as desired, which encases disk having internal flow passages. Made in sizes ⅜ to 1 in. for 0 to 2000 psi and ⅛ to 1 in. for 0 to 6000 psi.

O-RINGS—*Plastics Div, Sparta Heat Treat Co, East Sparta, Ohio.* Teflon; molded by company specializing in that plastic. Not all sizes are available.

SILICONE FLUIDS—*General Electric Co, Silicone Products Dept, Waterford, NY.* Viscasil exhibits small change in viscosity at temperature extremes.

WATER SEPARATOR — *Warner Lewis Co, Div Fram Corp, Tulsa, Okla.* Excel-So removes entrained water from light hydrocarbon products. Available with carbon steel or Monel piping.

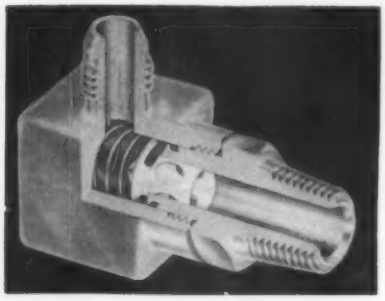


PLUG VALVE — *The Imperial Brass Mfg Co, 1200 W Harrison St, Chicago 7, Ill.* For pneumatic applications, fluid transmission systems, instrumentation, and similar uses. Pressures to 300 psi.

SOLENOID VALVES — *Barksdale Valves, 4125 Alcoa Ave, Los Angeles 58, Calif.* For 0 to 250-psi oil service; incorporates Shear-Seal principle; not critical to pipe scale because lapped sealing members are in constant contact.

MOTOR CONTROL VALVE — *Industrial Div, Minneapolis-Honeywell Regulator Co, Wayne and Windrim Aves, Philadelphia 44, Pa.* Series 80 has redesigned diaphragm motor with pressed steel case plates. Valve has yoke with mounting bosses on either side.

PARTS and MATERIALS—hydraulic



CHECK VALVE—*James-Pond-Clark, 2181 E Foothill Blvd, Pasadena 8, California.* Right angle, has all characteristics of standard inline 200 series, but fits into limited space.

4-WAY VALVES—*Denison Engineering Co, 1160 Dublin Rd, Columbus 16, Ohio.* Pilot-operated, solenoid-controlled, for circuits to 3000 psi. Pilot pressure can be internal or external. Capacity: 20 gpm for ¾-in. pilot, 1¼ gpm for ⅛-in. solenoid valves.

CONTROL VALVE — *Hydraulic Research and Manufacturing Co, 2835 N Naomi St, Burbank, Calif.* Hydraulic; incorporates pilot pressure valving to control to close tolerances.

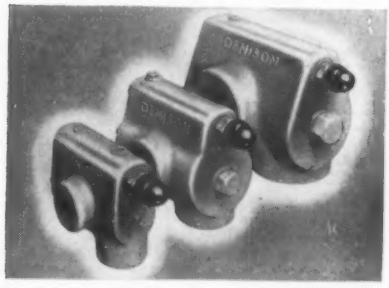
MAGNETIC FLOW METER — *The Foxboro Co, Foxboro, Mass.* For 2- to 8-in. flow lines. Measures liquids which have enough conductance and velocity.

BRONZE VALVES — *R-P&C Valve Div, American Chain and Cable Co, Reading, Pa.* Stem material is Coradur and aluminum silicon bronze alloy which combines a favorable machining index with high durability.

VALVE—*Skinner Electric Valve Div, Skinner Chuck Co, Edgewood Ave, New Britain, Conn.* V5-3 has quick exhaust feature to increase operating speed of small air and hydraulic cylinders by more than doubling the speed of cylinder return stroke.

FOUR-WAY VALVE—*Double A Products Co, Manchester, Mich.* Solenoid-controlled, pilot-operated QF, QM, QJ Series in 2-position (no spring), spring-centered, and spring-offset models. Operating pressures to 2000 psi.

CHECK VALVE—*Rivett Lathe & Grinder, Inc, Brighton 35, Boston, Mass.* 3000 psi; allows free flow in one direction and prevents flow in opposite.



RELIEF VALVES—*The Denison Engineering Co, Columbus, Ohio.* Pressure control in 2000-psi hydraulic circuits. Pipe sizes of ½, ¾, 1¼ and 1½ in.

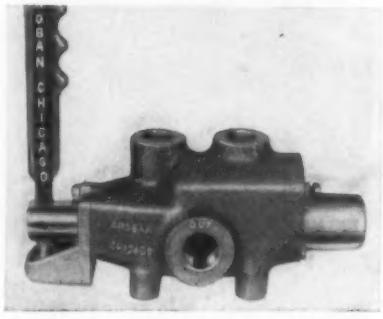
VALVES—*Barksdale Valves, 5125 Alcoa Ave, Los Angeles 58, Calif.* ½-in. manifold 4-way with sub-base permanent plumbing arrangement. All four lines may be brought up from the bottom, from four sides, or in combination.

VALVE—*Modernair Corp 400 Preda St, San Leandro, Calif.* Solenoid-operated fourway, five-port for low pressure systems. Pilot pressure, equal to operating line pressure, employed to shift valve spool.

CONTROL VALVE — *Ross Operating Valve Co, Dept 1900, 6489 Epworth Blvd, Detroit, Mich.* Shuts itself off when any component does not operate normally. AC solenoid, pilot-operated.

VALVES—*Atlas Mineral Products Co, Mertztown, Penna.* Non-plasticized type I PVC needle, plug, and globe valves, in sizes from ⅛ to 2 in.

SOLENOID VALVES — *Beckett-Harcum Co, 1087 Wayne Rd, Wilmington, Ohio.* Fitted with single ½-in. conduit outlet from which all electrical leads extend. Sizes now available are ¼ in., ⅜ in. and ½ in. for air and ⅜ in. for fluid.



HYDRAULIC VALVE—*Groban Supply Co, 1139 S Wabash Ave, Chicago 5.* Pressure-balanced, sliding-spool, 4-way control valve for pressures to 1500 psi. Model 126 has adjustable relief valve 4-position control lever drilled for remote-control rod.

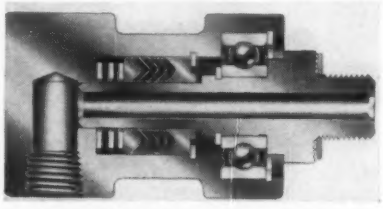
FLOW-CONTROL LOCK—*The Cross Co, Dept 16P, Detroit 7.* Prevents tampering with hydraulic feed setting on production machine tools. Models for Vicker's ¼-in. flow-control valves and remote control panels.

VALVE—*Airmatic Valve Inc, 7317 Associate Ave, Cleveland 9.* Four-way hand-and-foot-operated, for control of double acting air or hydraulic cylinders. Four standard pipe sizes: ¼, ⅜, ½, and ¾ in. for air, oil, water, in pressure range 0-150 lb.

SOLENOID VALVE — *Hays Mfg Co, 814 W 12th St, Erie, Pa.* Provides automatic on-and-off control of flow (water or air). Pilot action provides large capacity. Available in ⅜, ¾, and 1¼-in. pipe sizes.

V-RINGS — *Reid Enterprises, 3715 Santa Fe Ave, Los Angeles 58, Calif.* Teflon Super-Thin for pumps, valves, and all types of packing have a cross-section as thin as 0.015; for use in temperatures from — 150 to + 550F.

HYDRAULIC COUPLING—*Powertube Engineering Co, Olivet, Mich.* A reusable coupling, Stemlok, provides simple method of connecting hydraulic tubing to pressure hose from ¼ to 2 in. ID. Unit permits maximum use of low-cost tubing and eliminates need for special adaptor couplings.



REVOLVING JOINT—*Barco Mfg Co, Dept J-15, 500 Hough St, Barrington, Ill.* ¼-in. ID for air or hydraulic connections; for use at temperatures to 180 F and pressures to 300 psi (air) or 1500 psi (hydraulic). Max speed is 2500 rpm.

HYDRAULIC PUMP — *Bee Line Co, Davenport, Iowa.* Pressure is delivered to rams for pushbutton control; pushbutton conveniently located on top of pump. Pump delivers over 10,000 psi at 80-lb air pressure.

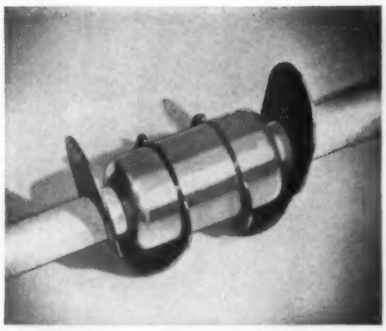
PRESSURE REGULATORS — *Generant Engrg Co, 260 S 20th St, Newark 3, NJ.* Made in ¼, ⅜, and ½-in. pipe size, with or without pressure gage connection. Forged brass bodies permit 400-psi inlet pressure. Metal diaphragms are used, flanges are screwed, valve is self-aligning.

FLOW REGULATOR — *Fischer & Porter Co, 17 Jacksonville Rd, Hatboro, Pa.* Screwed into pipeline to maintain preset flow rate despite changes in upstream or downstream pressure. Operated by liquid passing through. The ½, 1 and 2-in. sizes in which the unit is available can handle flow ranges of 0.5-5, 1.0-15 and 6-80 gpm.

VOLUME CONTROL — *Industrial Sales Div, Hays Manufacturing Co, 816 W 12th St, Erie, Pa.* Maintains set water flow rate, regardless of variable inlet pressures, between 0.2 gpm and 14 gpm. Accuracy of 10% within 15 to 150 psi.

VALVE COUPLING — *C H Hunt & Son, Salem, Ohio.* Gives operator complete and safe control of airline at any point between compressor and air-operated device. Available in ¼ to ¾-in. sizes with hose, male or female pipe threads; can be used with air supply to 250 psi.

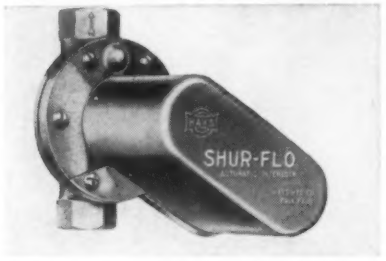
hydraulic—PARTS and MATERIALS



TUBE COUPLING—*The Master Enterprise Corporation of America, Boulder Bldg, Tulsa, Okla.* Simplifies process of connecting tubing or pipe in any size range. Available in different types of materials and designed with special O-rings for any type of liquid, gases, or temperatures.

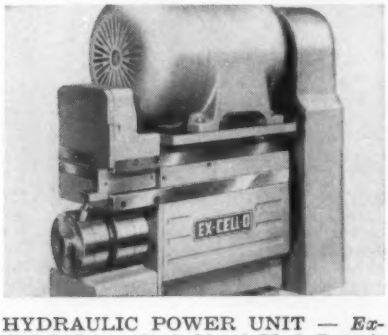
RELIEF VALVE—*Taco Heaters, Inc, 137 South St, Providence 3, RI.* No. 103 has discharge capacity of 326,000 Btu at 30 psi.

PRESSURE SWITCH — *Barksdale Valves, 5125 Alcoa Ave, Los Angeles 58, Calif.* Senses difference between two variable pressures, or variable and reference pressure.

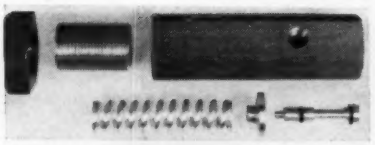


FLOW SWITCH—*Industrial Sales Div, Hays Mfg. Co, 812 W 12th St, Erie, Pa.* Automatic interlock operated by differential pressure across orifice. It protects equipment requiring definite flow of fluid.

POWER UNITS — *Turchan Follower Machine Co, 8259 Livernois, Detroit 4, Mich.* Hydraulic; standard, JIC, and custom-built designs; pressures from 250 to 2000 psi.

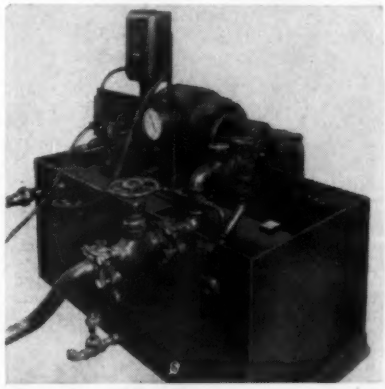


HYDRAULIC POWER UNIT — *Ex-Cell-O Corp, 400 Oakland Blvd, Detroit 32, Mich.* Style 22 is a self-contained, hydraulically operated unit designed for actuating single tool or multiple spindle head in controlled automatic cycles. It has an 8-in. stroke and a companion unit, Style 22-L, has a 12-in. stroke.



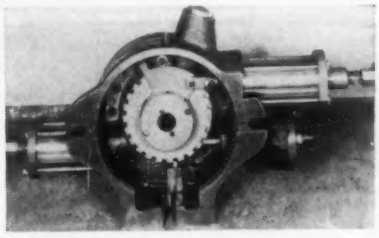
GAGE CUTOUTS—*Greer Hydraulics, Inc, 454 18th St, Brooklyn 15, NY.* Protection against excessive line pressures. Sensitive response at pressures as low as 10 psi.

POWER UNIT—*Pantex Mfg Corp, 521 Roosevelt Ave, Pawtucket, RI.* Hydro-Air combines long stroke and fast operation by pneumatic cylinder, powerful closing force by differential hydraulic piston. Stroke is 7 in., terminal force 2100 or 5600 lb, uses 0.11 cu ft of air per cycle.

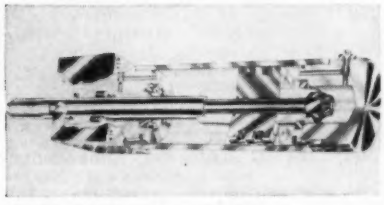


PACKAGED POWER UNITS—*Harvil Mfg Co, Corona, Calif.* For the operation of oil hydraulic equipment were developed for the company's die-casting machines. The units are available in a range of capacities from 7 to 54 gpm for delivery of pressures from 200 to 1000 psi, with horsepower ranging from 7½ to 30.

DOUBLE-ACTING CYLINDERS — *A K Allen Co, 57 Messerole Ave, Brooklyn 22, NY.* For air, water, or 1-p hydraulic operation, available in 1⅛, 2 or 3-in. bore, any stroke, with either single- or double-ended piston rods.

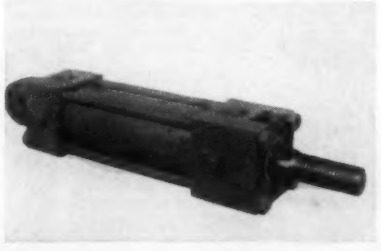


SPEED INDEXERS — *Erickson Tool Co, Cleveland, Ohio.* Built-in protective device is adjustable to meet requirements of varying loads. Said to assure constant uniform feed while allowing maximum speeds. Piston of control unit is linked to indexing mechanism, is self-contained, and works independently of actuating fluid. The standard 24-position index plate allows an indexing range of 4, 6, 8, 12 and 24 positions.

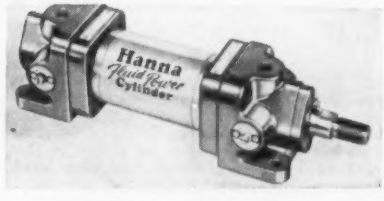


CYLINDERS — *Tomkins-Johnson Co, Jackson, Mich.* Use with air or oil; solid steel head and seamless steel body. Max of 200 psi (air) or 750 psi (oil.)

HYDRAULIC ACCUMULATOR — *Industrial Hydraulics Div, The Parker Appliance Co, 17325 Euclid Ave, Cleveland 12, Ohio.* Piston-type; furnishes hydraulic power at extremely high oil flow for relatively short cycles of operation intermittently. Operating pressure rating is 3000 psi; oil capacities range from 10 to 1155 in.

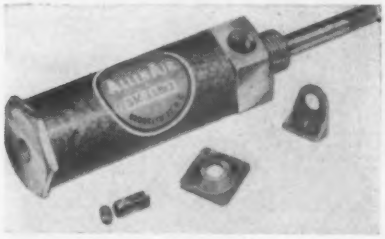


AIR-OR-OIL CYLINDERS — *Hydro-Line Mfg Co, Pine Rd, Rockford, Ill.* Series S cylinders operate to 1000 psi, air or oil. JIC standards. Bore sizes 1½ to 8 in., in 7 mounting styles. Any stroke length.



FLUID POWER CYLINDERS—*Hanna Engineering Works, 1751 Elston Ave, Chicago 22.* 750 series redesigned to produce more compact cylinders of large capacity; incorporate Hanna cushion.

PARTS and MATERIALS—hydraulic



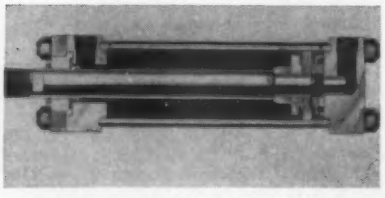
AIR CYLINDER—*A K Allen Co, 57 Meserole Ave, Brooklyn 22, NY.* Double-acting, 1½-in.-bore cylinders are available in inches and half inches of stroke from 1 to 6 in. max. Flange or foot mounts, and piston rod clevis available.

COMPRESSIBLE LIQUIDS — *Hydra Springs Div, Wales-Strippit Corp, 345 Payne Ave, North Tonawanda, NY.* Used in Wales Hydra springs. Combines principle of liquid compressibility at ultra-high pressures with lubricity.

HYDRAULIC COMPONENTS — *Hydraulic Power Div, Hydraulic Press Mfg Co, 101 Lincoln Ave, Mount Gilead, Ohio.* Line of hydraulic components includes: fixed and variable displacement pumps, motors; pneumatic and hydraulic cylinders; directional and functional valves, and such accessories as filters, gages, welding flanges, heat exchangers and slip joints.

LIQUID SPRINGS — *Wales-Strippit Corporation, 345 Payne Ave, N Tonawanda, NY.* With new silicone liquids, compressibility has been raised to as high as 12% at 20,000 psi. Units which formerly punched ¼-in. material now handle ¾-in.

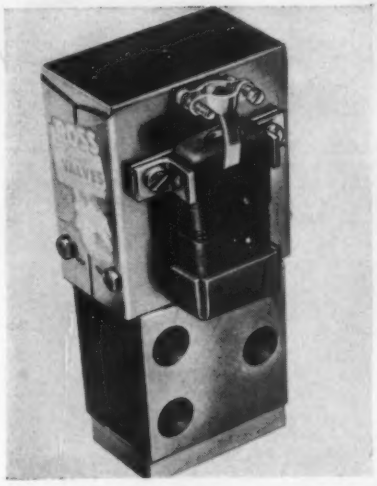
CYLINDER MOUNTING—*Miller Fluid Power Co, 2040 N Hawthorne Ave, Melrose Park, Ill.* Square lugs mount flush with standard square heads and cape. 1½ to 20-in. bores, for 200 psi cylinders; 1½ to 12-in. bores for 2000 psi cylinders.



HYDRAULIC CYLINDERS—*Vickers, Inc, 1400 Oakman Blvd, Detroit 32, Mich.* Sizes range from 1½ to 6-in. bore, with standard or HD piston rods. Maximum rated operating pressure is 2000 psi.

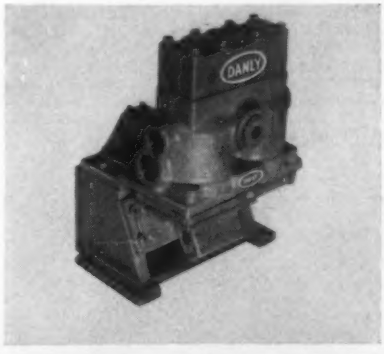
HAND VALVE—*Mechanical Air Controls, Inc, 10030 Capital, Oak Park, Detroit 37, Mich.* Hand valve's one-piece rotor is HyCar bonded. Compound contains an additive, said to provide the maximum in lubricating qualities, ease of operation, and long life.

CHECK VALVE — *James-Pond-Clark, 2181 E Foothill Blvd, Pasadena 8, Calif.* In 1½ and 2-in. sizes, has circle seal design for operation with low pressure drop and no leakage.



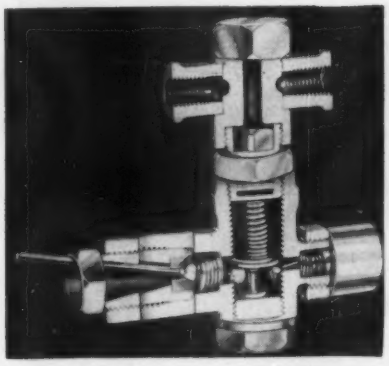
AIR VALVE—*Ross Operating Valve Co, Detroit.* Four-way, two-position, direct-solenoid-operated air control valve weighs 2½ lb, operates at 800 cpm, measures 5x2¼x2 in. Pressure rating is 250 psig air, max temperature 180 F. Valve has only one moving part and is easily serviced.

VALVE—*Rivett Lathe & Grinder, Inc, Boston, Mass.* Model 3620 meters flow in one direction and allows free flow in the opposite direction. Recommended for 150 psi air, or 300 psi oil or water, the ⅜-in. size valve has a 3-in. length by 1⅛-in. hex, and weighs only 6 oz.



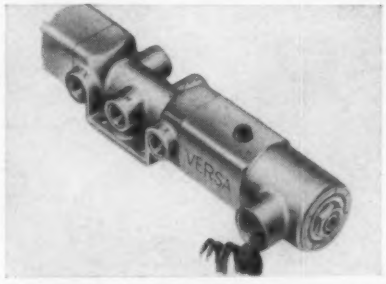
CLUTCH AIR VALVE — *Danly Machine Specialties, Inc, 2100 South Laramie Ave, Chicago 50, Ill.* To eliminate accidental stroking of mechanical presses due to valve failure—consists of two independent pilot-operated valves actuated by electromagnets (pilot valves) and air (main valves).

AIR-CONTROL VALVES — *Numatics, Milford, Mich.* Line consists of 47 models with pipe sizes ranging from ¼ to 1 in., comprising both 2-way and 3-way actions.

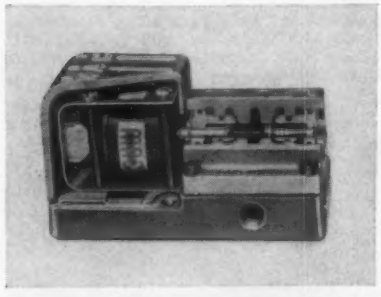


AIR VALVE — *Pantex Mfg Co, 521 Roosevelt Ave, Pawtucket, RI.* Pantex Wobble-Rod; lever swivels so free end moves vertically, laterally, diagonally, or in circles. Allows lateral play during vertical throw, permits direct linkage to rotating, oscillating, toggle, lever, slot or straight-thrust mechanisms.

INSTRUMENT AIR VALVES—*Crawford Fitting Co, 884 E 140 St, Cleveland 10, Ohio.* Equipped with Swagelok ends provide leakproof and torque-free seals on every type of instrumentation installation.

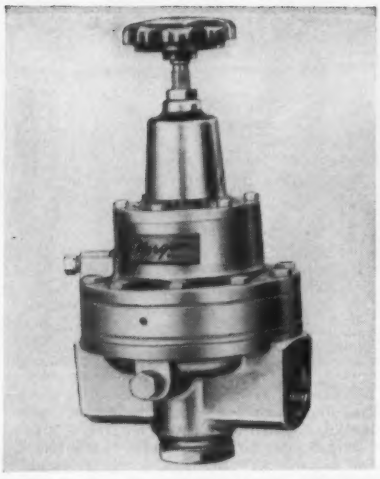


SOLENOID VALVES—*Versa Products Co, Inc, 249 Sholes St, Brooklyn, NY.* Electrical operation of the Versa line of 2-, 3- and 4-way valves in ⅛ through ½ NPT sizes is possible through the development of a solenoid actuating device.

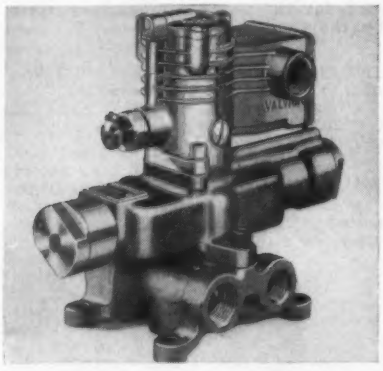


SOLENOID-OPERATED AIR VALVE —*Mechanical Air Controls, Inc, 10030 Capital, Oak Park, Detroit 37, Mich.* Macsolenoid incorporates floating C-frame design. Frame is cushioned in shear-loaded Hy-Car rubber inserts, and has no metal-to-metal contact with stationary outer bracket.

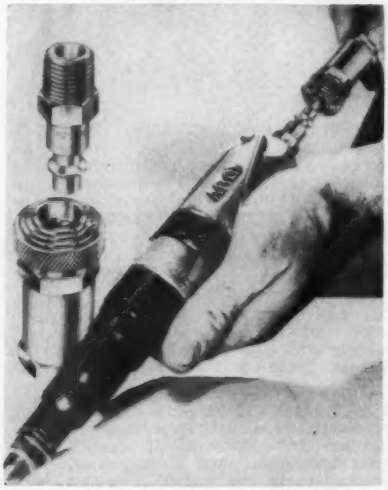
AIR VALVE—*Mead Specialties Co, 4114 North Knox Ave, Chicago 41, Ill.* One motion of lever of ½-in. air valve actuates one end of double-acting cylinder and exhausts the other. Three-way operation is possible by plugging one port.



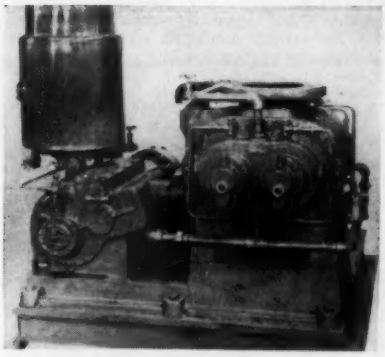
AIR-PRESSURE REGULATOR—*C A Norgren Co,, 3436 So Elati, Englewood, Colorado.* Reduces line pressures up to 400 psi to working pressures from 2 to 120 psi. Provides a pilot regulator and a pressure regulator in an integral unit. Available in ½, ¾ and 1-in. sizes.



AIR CONTROL VALVE — *Valvair Corp, Akron 11, Ohio.* Stem in base and plunger in solenoid are only moving parts. Pressure range is from 35 to 200 psi for air and low pressure hydraulics.



AIR COUPLING — *Roylyn Inc, 1706 Standard Ave, Box 3307, Grand Central Station, Glendale 1, California.* Series 1800 incorporates quick-lock principle (one-quarter turn). Meets requirements of MIL-C-4109A.



VACUUM PUMP—*The Kinney Mfg Div, New York Air Brake Co, Boston, Mass.* High-vacuum stage in low-pressure range where single vacuum pumps have poor volumetric efficiency. Designated Model MB, it is a rotary positive-displacement pump equipped with mechanical shaft seals.

FLARE CONNECTOR—*Crawford Fitting Co, 884 E 140 St, Cleveland 10.* Threaded end conforms to AN standards; opposite end incorporates Swagelok design principle, for torque-free, leak-proof seals at all connections. Sizes from ⅛ to 1 in.

SMALL BELLOWS VALVES — *Hoke, Inc, 199 South Dean St, Englewood, NJ.* 440 Series for highly corrosive applications, high vacuum work, and mass spectrometry. Pipe sizes available are ⅛ to ½ in., with ¼- and ½-in. Swagelok tube ends.

AIR COUPLER—*Lincoln Engineering Co, 5701 Natural Bridge Ave, St Louis 20, Mo.* Allows 70 cfm of air at 150 psi. Automatic air-check cuts off supply when coupling is opened.

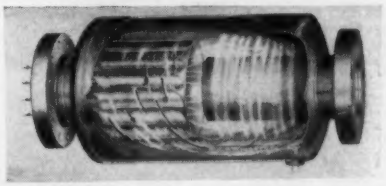
AIR-OPERATED CLUTCHES — *The Industrial Clutch Corp, Waukesha, Wis.* Built-in rotary seal and flow control valve provide fast clutch release with gradual engagement. Can be used as air-set, spring-released brake by holding normally rotating drive ring and cylinder assembly stationary.

SILENCERS — *Burgess-Manning Co, Libertyville, Ill.* For noise produced by air compressors, blowers, vacuum pumps and other machines expelling high-velocity air to atmosphere. Series CA and LCA are designed for operation under moisture-free air conditions and for temperatures up to 200 F.

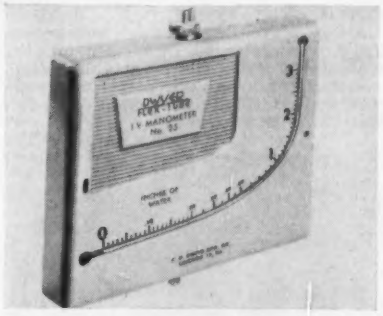
SILENCERS — *Burgess-Manning Co, Libertyville, Ill.* For the noise produced by air compressors, blowers, vacuum pumps, and other machines expelling high velocity air to atmosphere are available.

AIR CONTROL MANIFOLD—*Republic Mfg Co, 1930 W 77th St, Cleveland 2, Ohio.* Combines various units of conventional setup and eliminates fourteen pipe connections. All units are brought by manifolds close to the operator's working position.

PURIFIER—*The V D Anderson Co, 1935 W 96th St, Cleveland 2, Ohio.* Keeps moisture and dirt out of air tools and other pneumatic equipment.



MOISTURE SEPARATOR — *Wright-Austin Co, 3245 Wight St, Detroit 7, Mich.* For use in horizontal steam, air, and gas line; uses centrifugal force principle for removing entrainment.

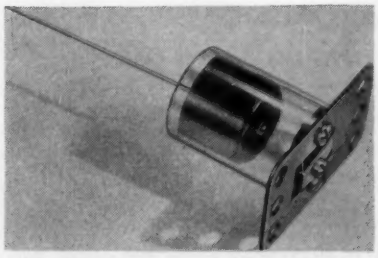


FLEX-TUBE GAGE—*Dwyer Mfg Co, 317 South Western Ave, Chicago 12, Ill.* Serves as air filter gage, static pressure indicator, draft gage, or air velocity meter. It is equipped with a plunger-type oil level adjuster. Ranges are 0 to 3 in. and 0 to 7 in. water.

FILTER-LUBRICATOR — *Breco Mfg Co, Inc, 309 E Saratoga St, Baltimore 2, Md.* Eliminates complicated piping and fittings required for installation of individual units. Only two connections are required. Provides control for air-operated equipment requiring 0 to 100 psi in 2-lb increments and 0 to 200 psi in 5-lb increments.

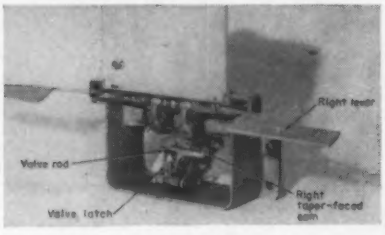
AIRLINE LUBRICATOR—*M-B Products, 46 Victor Ave, Detroit 3, Mich.* To be used in combination with M-B Whirl-A-Way automatic airline filter and M-B automatic pressure reducing and regulating valve. Lubricator has a positive shut-off.

DEHYDRATOR — *Hankinson Corp, 117 Biltmore Bldg, 951 Banksville Rd, Pittsburgh 16, Pa.* Model CM-1 desiccant air and gas dehydrator for isolated pneumatic equipment. Rated at 1 scfm at 100 psig and 70 F.



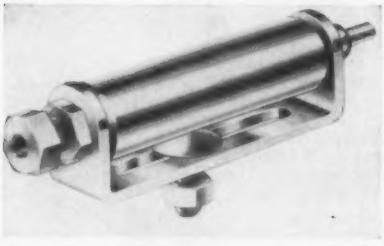
AIR-DAMP DASHPOT—*Electric Regulator Corp, Norwalk, Conn.* System stabilizer in control mechanisms and switchgear. It will operate in any position at temperatures from —75C to +150C. Max stroke is ½ in.

AUTOMATIC CONTROL — *Sterling Electric Motors, Inc, 5401 Telegraph Rd, Los Angeles 22, Calif.* Pneumatic control for Speed-Trol variable speed transmission uses Cono motor and provides automatically controlled drive for processing operations.

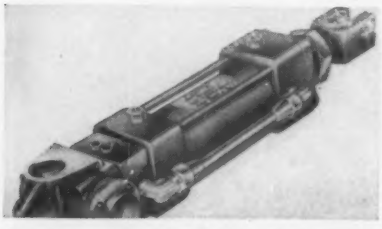


CONTROL — *Pantex Mfg Corp, 521 Roosevelt Ave, Pawtucket, RI.* Mechanism for opening pneumatic circuit with two levers. Prevents operation until two necessary conditions are fulfilled.

PRESSURE REGULATORS—*The K-G Equipment Co, 1744 Lehigh St, Allentown, Pa.* Forged aluminum for use with most compressed gases. Two-stage models designated 1100 Series; single-stage, 1200 Series.



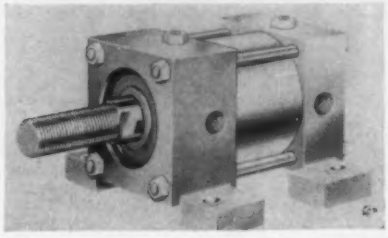
AIR CYLINDER—*Summit Tool & Mfg Co, 2907 Summit St, Toledo 11, Ohio.* With adjustable air clamp. The 5/16-in.-dia shaft has rapid spring return; has 1-in. bore and 2½-in. stroke. Mounting bracket provides 3-in. longitudinal, 360° radial adjustment.



AIR MOTOR—*Lehigh Foundries, Inc, Air Control Div, 1500 Lehigh Drive, Easton, Pa.* Bores of 1½, 2 or 3 in. with any desired stroke. Built-in valve can be operated manually, by air, or by electricity. Valve body is high quality bronze; piston is stainless steel.

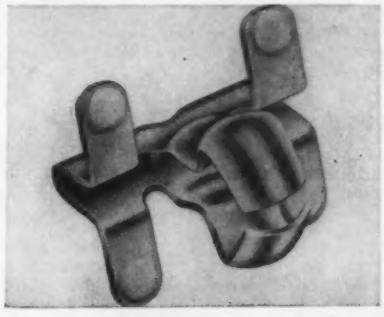
REGULATORS—*Air Reduction Sales Co, 60 East 42nd St, New York 17.* 8900 Series for use with gases supplied by pipeline systems using comparatively low pressures.

CYLINDERS—*Miller Motor Co, 2040 N Hawthorne Ave, Melrose Park, Ill.* Stock cylinders in combinations of bore, stroke, and mounting. Air cylinders are rated for 200 psi, hydraulic cylinders for 2000 psi.



AIR CYLINDERS—*The S-P Mfg Corp, 12415 Euclid Ave, Cleveland 6, Ohio.* Five mountings and eight bore sizes from 1½ to 6 in. Operate at pressures to 200 psi.

LOCKNUT—*Allmetal Screw Products Co, Inc, 821 Stewart Ave, Garden City, LI, NY.* Solid metal piece with slotted cone shape on one end and splined cylinder on the other, to be inserted in countersunk hole.



QUICK FASTENER—*Shakeproof, Div Illinois Tool Works, St Charles Rd, Elgin, Ill.* Quarter-turn Q-4 fastener for sheet metal parts is applied from one side only. Once snapped in place, unit is self-retaining in outer sheet.

MULTIPLE NUT-RUNNER — *Ingersoll-Rand, 11 Broadway, New York 4, NY.* Built for any number of nuts in any pattern desired. Provides automatic package unit for simultaneously running a number of nuts in time ordinarily required to run single nut.

LAP WELDING TOOL—*Utica Drop Forge & Tool Corp, Utica, NY.* Kold-welding tool for lap welding of aluminum sheet or foil without heat or electricity and without flux or chemical of any kind. Model KL-10 for aluminum sheet is ready for distribution. A corresponding tool for butt welding of aluminum and copper wire will follow. The tool weighs about 2.6 lb and is normally hand-operated in the manner of pliers. Price is $280, including one pair of dies.

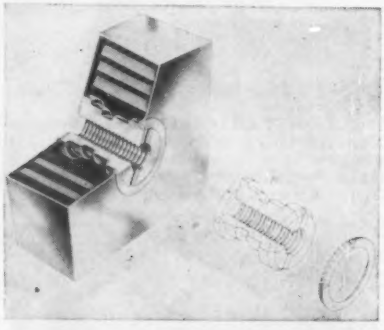
NUT LOCK—*Presstite Engineering Co, 3798 Chouteau Ave, St Louis 10, Mo.* Mastic nut lock provides tighter nuts, studs, and screws and eliminates lockwashers and special locknuts. Zorlok is applied by spatula, dipping, or squeezing from tube.

THREAD INSERT—*Heli-Coil Corp, Danbury, Conn.* Grip-end design locks screws, eliminates lock washers, nuts, or wires, requires no more wall thickness than conventional tapped thread. Available in 10-32 and ¼-28 in two lengths.

THREADED SPACER — *The Delron Co, Inc, Fasco Div, 5224 Southern Ave, South Gate, Calif.* For sandwich-type structure fastening; has tapped sleeve which receives attaching bolt. Developed for light-load applications. Grip lengths are from ⅜ to 1¼ in.

RETAINING RINGS—*Industrial Retaining Ring Co, Mt Vernon, NY.* No. 1000-6 are stacked on metal rods for use on 1/16-in.-dia shafts. Dispenser unit includes application tool.

INSERTS—*Rosan, Inc, 625 Coast Highway, Newport Beach, Calif.* Kits of locked-in studs or inserts. Each contains one size.

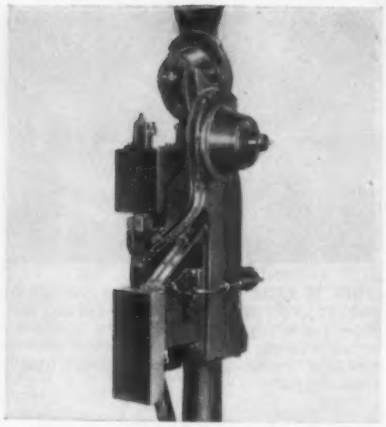


INSERT—*Shur Lok Corp, 9010 Bellanca Ave, Los Angeles 45, Calif.* Kwiko threaded self-locking unit for fastening objects to sandwich structures; installed without special tools. SL24 for ordinary AN bolts; SL25 for 100° countsunk head bolts.

THREADED INSERTS — *The Nylok Corp, Elmira Heights, NY.* Self-locking for use in non-ferrous forgngs, castings, and extrusions eliminate counterboring and special tapping require no special tools for insertion or removal.

THREADED INSERT — *Roylyn, Inc, 1706 Standard Ave, Glendale 1, Calif.* Slotted for screwdriver installation; provides permanent thread anchor for bolting metal to metal.

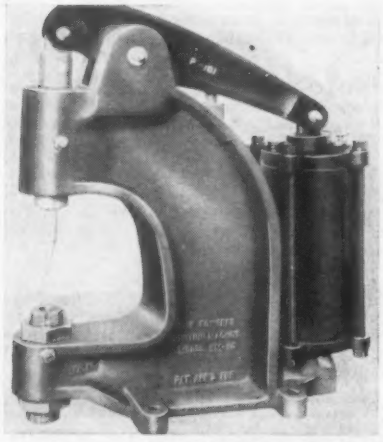
TAPPING SCREWS — *Continental Screw Co, New Bedford, Mass.* Two balanced cutting edges; G2 for steels, G3 for die-casting; H3 for low-driving torque.



DOUBLE RIVETER—*Chicago Rivet & Machine Co, Bellwood, Ill.* Model 106 feeds and drives compression rivets in sets. Tubular rivet is fed to rigid position in lower portion of machine, acts as pilot for assembling elements.

RIVET SEAL—*Franklin C Wolfe Co, 3644 Eastham Drive, Culver City, Calif.* Riv-O-Seal, device for sealing flush rivets and screws, said to eliminate need for pastes, speeds assembly, provides seal against gases or fluids at high and low pressures.

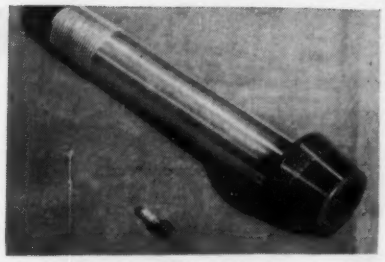
BOLTS—*Standard Pressed Steel Co, Jenkintown, Pa.* Standardized socket-head bolts up to 3-in. dia for large presses and machine tools. Also line of military-standard bolts and line of light-weight titanium bolts.



AIR-POWERED RIVETER — *Robinson Products, Inc, 16550 Wyoming Ave, Detroit 21.* Clinches up to ½-in. tubular steel rivets. Air cylinder delivers over 2 tons pressure, taking max of 150 psi. With 1-inch stroke, may be used for stapling, light punching, knocking out rivets.

BOLSTER BOLTS—*West Point Mfg Co, 26935 W 7 Mile Road, Detroit 19.* Tensile strength of 149,500 psi eliminates stretching, holding plates more firmly to the press bed. Lengths from 4 to 22 in.

SETUP STUDS—*The Jergens Tool Specialty Co, 712 E 163 St, Cleveland, Ohio.* Diameters of ¼, 5/16, ⅜, ½, ⅝, ¾, ⅞, and 1 in. with lengths in ¼-in. multiples up to 12 in. long.



COLD-WORKED BOLTS — *Standard Pressed Steel Co, Jenkintown, Pa.* Cold-worked fillet area under head. Five sizes ranging from 1 to 1½-in. dia have been added to the MS line.

TORQUE THUMBSCREWS — *Siewek Tool Co, 2862 E Grand Blvd, Detroit 2.* 4 styles, 21 sizes; can be disassembled by removing snap ring.

T-SLOT BOLT—*Techno Products, Inc, Cleveland, Ohio.* Q-bolt, originally intended for use in T-slotted machine tables, consists of steel tube with hex ends, each threaded ID. Ends receive T-slot bolt threaded stud with two parallel flat sides. ID of hex end has two matching grooves milled through threads.

HEADSCREWS—*Star Stainless Steel Screw Co, 699 Union Blvd, Paterson 2, NJ.* Heads require no polishing; substitute for brass, chrome-plate screws.

THREAD-CUTTING SCREWS—*Indiana Metal Products, Inc, 919 N Michigan Ave, Chicago, Ill.* Type "F" is a self-threading screw which cuts a machine thread as it is used. Tap-fluted pilot helps screw function as tap.

SOCKET SCREWS—*Allen Manufacturing Co, 113 Sheldon St, Hartford, Conn.* Smaller point, Allenpoint, will replace ASA cup point screws. Second change is an unthreaded leader point for cap-screws.

SETSCREWS—*Set Screw Manufacturing Co, 13 Main St, Bartlett, Ill.* Fluted-socket; require special wrench, lessening chance of tempering.

SETSCREW—*Set Screw & Mfg Co, Bartlett, Ill.* Top thread of Zip-Grip self-locking setscrew has been removed. Locking action takes place only where uniform tapping has been done.

FLOATING ANCHOR NUTS — *Nutt-Shel Co, Inc, 811 Airway, Glendale 1, Calif.* Variety of sizes in both one- and two-lug designs. Withstand temperatures to 550 F; conform to applicable requirements of specifications AN-N-5 and AN-N-10.

CONCAVE FASTENER — *Waterbury Pressed Metal Co, P-Nut Div, 300 Chase Ave, Waterbury, Conn.* Made of spring steel, with cut threads and self-locking corners. Sizes are 6-32 and 8-32.

SELF-LOCKING NUTS — *Jacobson Manufacturing Co, Kenilworth 9, NJ.* Double-chamfered and countersunk; may be assembled either side up for automatic hopper assembly.

FASTENERS—*Gries Reproducer Corp, 400 Beechwood Ave, New Rochelle, NY.* Die-cast, thumbnuts and screws for replacement or adjustment applications.

LOCKNUT—*Nut-Shel Co, Inc, 811 Airway, Glendale, Calif.* Free-spinning; rides over corrosion; to 1700 G series for temp to 1200 F; 1700 F series, to 1600 F.

NUTS—*Jacobson Mfg Co, Kenilworth, NJ.* Self-locking; one-piece nut and lock washer combination, hardened steel throughout. All machine screw sizes.

SPRING LOCKNUT—*Morse Products Development Co, Los Angeles, Calif.* Attains tightening load on bolt without use of torque wrench, maintains load under spring pressure.

STAMPED WING NUTS — *Jacobson Mfg Co, Kenilworth 10, NJ.* Produced automatically at reduced costs. Three styles: regular, extra-wide, and flat.

PUSHNUTS—*The Palnut Co, 61 Cordier St, Irvington, NJ.* Steel fasteners slip over unthreaded studs or rods, and lock tight with push of application.

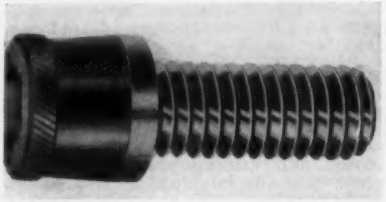
NUT—*National Machine Products Co, 44225 Utica Road, Utica, Mich.* 12-pointer, allows use of thin-wall socket wrenches for high torques and heavy drives especially where tool clearance is a factor.

HEX NUT—*The Kaynar Co, Kaylock Div, 820 E 16th St, Los Angeles, Calif.* Kaylock withstands temp of 550 F. Available in 6-32, 8-32, 10-32, ¼-in.-28, 5/16-in.-24, ⅜-in.-24, and 7/16-in.-20 tap sizes.

LOCK NUT—*Nutt-Shel Co, Inc, 811 Airway, Glendale 1, Calif.* Designed to ride over corrosion on threads of bolts and screw. The 1700 G series withstands temp up to 1200 F; 1700 F series to 1600 F.

NUT—*Fox Products Co, 4720 N 18th St, Philadelphia 14.* Quintlock bites into surface of sheet metal, forming permanent torque-resistant thread in the sheet.

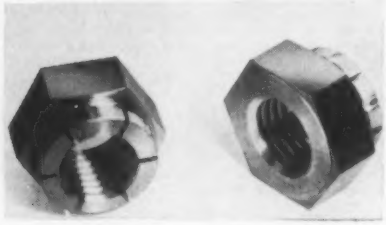
LOCK NUT—*Allmetal Screw Products Co, 821 Stewart Ave, Garden City, LI, NY.* Slotted cone shape on one end, splined cylinder on other, to be inserted in countersunk hole.



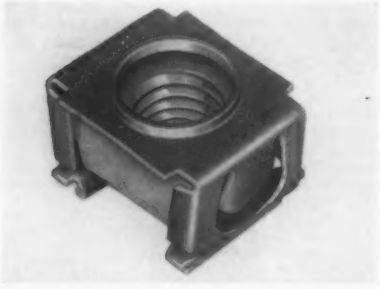
WEDGE-ACTION SOCKET SCREW—*Safety Socket Screw Co, 6501 Avondale Ave, Chicago 31.* Tapered, chamfered shoulder has ⅛-in. lead washer which locks and seals screw by forming alloy wedge.

TITANIUM LOCKNUTS—*Elastic Stop Nut Corporation of America, Union, NJ.* First units in the line will be double-hex nuts with nylon locking inserts, sizes from 5/16 to ⅝ in. A special permanent coating has been developed to provide lubrication and increase resistance to galling and seizure.

BOLTS—*Standard Pressed Steel Co, Jenkintown, Pa.* Rated tensile strength of 200,000 to 225,000 psi; 12 sizes from ¼ to 1½-in.-dia.



ENGINE NUT — *Standard Pressed Steel Co, Jenkintown, Pa.* Series 32FE for aircraft-, automotive-engine use where temperatures do not exceed 550 F.



FASTENER — *Tinnerman Products, Cleveland 13.* T-shaped nut, called self-anchoring Speed Grip, is made of high-grade steel and preassembled into spring steel retaining cage.

INDUSTRIAL ADHESIVE—*Cycleweld Products Div, Chrysler Corp, Detroit 31, Mich.* Fastens rubber, metals, wood, plastic, ceramics, or fibers together in any combination; reportedly resists attack by salts, alkalis, acids, moisture, or solvents.

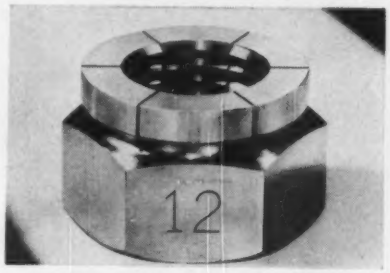
PLASTIC CEMENT — *Atlas Mineral Products Co, Mertztown, Pa.* Vitroplast, neutral setting, adheres to variety of surfaces, is resistant to many solvents.

ADHESIVES — *Rubber & Asbestos Corp, Dept P, 225 Belleville Ave, Bloomfield, NJ.* For bonding duPont's Mylar polyester film to a wide range of papers, plastic films, fabric.

ADHESIVE—*Adhesive Products Corp, 1660 Boone St, New York 60.* Styrogrip for bonding Styrofoam, does not disturb or collapse structure. Rapid drying, fast grab.

BUSHINGS—*J G Jergens Co, 11106 Avon Ave, Cleveland, Ohio.* 50 standard sizes for tool piloting applications requiring absolute seal of bearing cavity. Tapered bearings can be adjusted and are adaptable to receive removable slip bushings as well as key or key-ways.

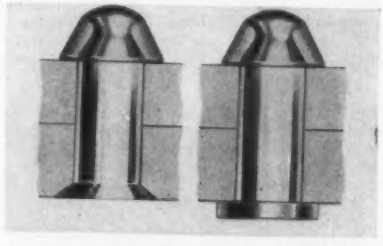
ADHESIVE — *Flexrock Co, Packing Div, 3600-A-Filbert St, Philadelphia 1.* Flexrock No. 80 bonds Teflon to itself and other materials. Product retains usable pressure-sensitive characteristics from — 67 F to + 392 F.



SELF-LOCKING NUT — *Standard Pressed Steel Co, Jenkintown, Pa.* Flexloc resists temp to 1200 F. Made in seven standard sizes with diameters ranging from No. 10 through 9/16 in.; threads are NF series.

STRUCTURAL ADHESIVES—*Rubber & Asbestos Corp, Dept P, 225 Belleville Ave, Bloomfield, NJ.* Bond metal-to-metal and metal-to-plastic; one offers high strengths at normal temp, other flexibility at elevated temp.

THREAD COMPOUND—*Crane Packing Co, Dept AMN, 1800 Cuyler Ave, Chicago 13, Ill.* Protects against welding action of threaded connections subjected to extreme heat. Eliminates seizing and galling at operating temp to 1200 F.



TITANIUM RIVETS—*Pheoll Mfg Co, 5720 W Roosevelt Rd, Chicago 50.* C-130AM titanium alloy; minimum shear strength of 95,000 psi.

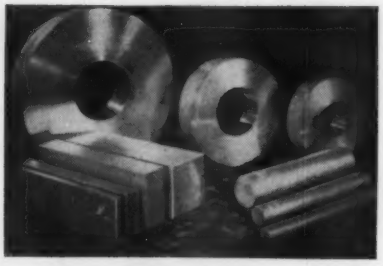
POLYESTER RESIN—*General Electric Co, Chemical Div, Pittsfield, Mass.* AR493, is reported to have chemical and heat resistance superior to that offered by conventional styrene polyester resins. Maximum continuous operating temperatures as high as 150 C.

ALUMINUM ALLOY—*Harvey Aluminum, Torrance, Calif.* Bridges gap between 61S, and 24S and 14S. In thickness to ¼ in., tensile strength is 50,000 psi.

SEALER—*The Adhesive & Coatings Div, Minnesota Mining & Mfg Co, 423 Piquette Ave, Detroit 2, Mich.* Extruded rubber-based sealer with 100% solids content expands uniformly over length of sealer bead. Designated EC-1209 it cures and expands to form gasket.

DIE STEELS—*Latrobe Steel Co, Latrobe, Penna.* Free-machining high-carbon-high-chromium steels of D-2 cold-work type.

PLASTIC MATERIALS — *Emerson & Cuming, Inc, 869 Washington St, Canton, Mass.* For R-F microwave applications; standard rod sizes of 1, 2, and 3 in. and sheets with thicknesses of ½ and 1 in. Temperature range is from -70 to +125 C.



STOCK DIE BLANKS—*Ampco Metal, Inc, 1745 So 38th St, Milwaukee 46, Wis.* For press operations where stainless steel is being worked. Available as solid rounds, rectangles, and centrifugally cast rings.

BERYLLIUM ALLOY — *Beryllium Corp, Reading, Pa.* Said to give both hardenability and corrosion-resistant and non-galling properties to stainless steels.

PHOSPHOR BRONZE STRIP—*American Silver Co, 63-07 Prince St, Flushing, NY.* Custom-rolled in strip up to 6 in. wide and down to 0.0005 in., to tolerances as close as ±0.0001 in. Available in any quantity from 1 lb to thousands of pounds.

PROTECTIVE SHEETING — *Magic Chemical Co, Dept N286, 121 Crescent St, Brockton 2, Mass.* Said to give absolute protection against abrasion and corrosion on all kinds of equipment.

POLYESTER FILM—*E I DuPont de Nemours & Co, Wilmington, Dela.* Mylar looks like cellophane, is being used in electrical insulation, thermal insulation, metal laminates, and drum liners.

PHOTO-TEMPLET MATERIAL—*Tru-Scale Engineering Supply Co, Wichita, Kan.* Made by impregnating glass fiber cloth with a blend of polyester resins.

SPRING ALLOY — *Abrasives Div, Elgin National Watch Co, Elgin, Ill.* Cobalt-base Elgiloy, has been placed back on the market.

MOLDING MATERIAL — *The Dow Chemical Co, Midland, Mich.* Styron 688 injection molding; such applications as thin wall containers, vials and tubes, back-painted parts.

CORROSION RESISTANT ALLOYS—*Donegal Manufacturing Co, Marietta, Pa.* Produced in cast form with min tensile strength of 180,000 psi, min yield strength of 165,000 psi. DC-50 contains 0.05% C, 16.5% Cr, 4% Ni, and 4% Cu.

TOOLING PLASTIC — *Rezolin, Inc, 5736 West 96th St, Los Angeles 45, Calif.* With metal filler suspended in hardener ready for blending with resin. Hardening time is 2 to 4 hrs at room temperature.

ALUMINUM COMPOUND—*The Sculp-Metal Co, 701-1 Investment Bldg, Pittsburgh 22, Pa.* Sculp-Metal is like a clay or putty in its original state; it self-hardens into a compact high-strength mass with properties of stability, corrosion resistance, wear, and permanency. It is harder than lead, withstands temperature from -65 to +350 F.

CEMENTED CARBIDE — *Carboloy Dept, General Electric Co, Detroit 32, Mich.* Grade 370 for heavy-duty steel-cutting; wide range of standard stocked blanks.

TITANIUM-BASE ALLOY — *Rem-Cru Titanium, Inc, Midland, Pa.* A-110AT is weldable and has higher strength above 900 F, represents first commercial production of titanium alloy containing appreciable quantities of tin.

TOOLING PLASTIC — *Rezolin, Inc, 5736 West 96th St, Los Angeles 45, Calif.* Ethylcellulose is the base of a thermoplastic for tooling needs of high-impact metal forming. Material is comparatively easy to melt and cast, eliminates need for metal clearance between punch and die.

DIE STEEL—*Latrobe Steel Co, Latrobe, Pa.* Olympic FM is a free-machining high-carbon high-chromium die steel of the air-hardening type. Using HSS cutting tools, feed, 0.009 in. per rev, depth of cut, 0.062 in., proved (60-minute tool life), cutting speed for regular Olympic was 30 fpm and 60 fpm for free-machining grade.

TOOL STEELS—*Carpenter Steel Co, Reading, Pa.* Combined characteristics of deep-hardening, and easy, low-temperature heat-treatment of oil-hardening steels are combined in air-hardening tool and die steel called Vega.

TI-CARBIDE CERMETS—*Firth Sterling, 3113 Forbes St, Pittsburgh 30, Pa.* Titanium carbide plus nickel binder in several analyses including FS-26, which is 54.3% TiC, 40.0% Ni and 5.7% Cr_3C_2.

HIGH STRESS ALLOY—*Firth Sterling, 3113 Forbes St, Pittsburgh 30, Pa.* Iron-chromium-nickel alloy stands high stress up to 1350 F, yet is machinable after heat-treatment.

METAL-FILLED PLASTIC—*Chemical Development Corp, Danvers, Mass.* Devcon works like modeling clay, then hardens into rigid material suitable for jigs, fixtures, some dies, and even gages and molds. Material can be chrome, nickel, or copper plated.

STAINLESS STEEL POWDER—*Alloy Metal Powders, Inc, 238 Eagle St, Brooklyn 22, NY.* To fabricate gears, television cores, self-lubricated bearings, welding alloys, metallic paint, bushings and porous metal filters. Powder is 18-8 low carbon moldable stainless.

SURFACE CASTING RESIN — *Rezolin, Inc, 5736 West 96th St, Los Angeles 45, Calif.* L-930 Toolplastik; metal filler is suspended in hardener and no hardener mixing is required. Metallic appearance; low viscosity when mixed, two to four-hour hardening time.

PLASTIC FOAM—*Emerson & Cuming, Inc, 869 Washington St, Canton, Mass.* Eccofoam is series of low-density, rigid, unicellular, thermosetting plastic foam materials with wide range of bulk densities. Can be readily machined.

CASTING RESIN—*Emerson & Cuming, Inc, 869 Washington St, Canton, Mass.* Stycast TPM is a thermosetting material usable over wide temperature range. Dielectric strength is 450 volts per mil.

LAMINATING RESINS—*Rezolin, Inc, 5736 W 96th St, Los Angeles 45, Calif.* Tool-plastik L-900 and Gelkote L-910, for plastic tooling applications, are non-corrosive, non-brittle, and cure at room temperature. L-900 is for standard laminating applications; L-910 produces a high-gloss surface on laminating tools.

HIGH DENSITY MATERIAL—*Firth Sterling, Inc, 3113 Forbes St. Pittsburgh 30, Pa.* Pure tungsten with small amounts of nickel and copper added to aid machinability. It has a specific gravity of 17.5-18.2 which makes it up to 60% heavier than lead.

ALUMINUM ALLOY—*Harvey Aluminum Co, Torrance, Calif.* Development of 66S bridges the gap between lower strength of 61S type alloy and the higher strength hard alloys, 24S and 14S. Characteristics are similar to that of 24S in yield strength.

ALUMINUM ALLOY—*Harvey Aluminum Co, Torrance, Calif.* HZM 100 has mechanical properties of 100,000 psi, and maximum resistance to corrosion.

TRANSPARENT SHEET MATERIAL —*The Homalite Corp, 11-13 Brookside Drive, Wilmington, Del.* Homalite CR-39, a clear, transparent, scratch and abrasion-resistant sheet material developed from thermosetting resins. Readily machined.

METAL-FILLER — *All-State Welding Alloys Co. Inc, 249-55 Ferris Ave, White Plains, NY.* Cold-applicable, waterproof, rustproof, non-shrinkable solder. Tensile strength, 650 psi; stands temps to 360 F and —40 F.

HIGH-DENSITY ALLOY STEEL — *Keystone Carbon Co, St Marys, Pa.* Keystone grade Z-2 provides high physical characteristics. When molded and heat treated, parts have tensile strength of 115,000 psi, hardness of R_c 30.

POLYESTER RESIN—*Hooker Electrochemical Co, Niagara Falls, NY.* Corrosion-resistant Hetron combines fire resistance, light stability, superior electrical and structural properties. Can be combined with glass fiber for plastic car and truck bodies, corrugated and flat panels for indoor and outdoor use, and for special pipe for use where fire is a constant hazard.

PREALLOYED STEEL POWDER — *Vanadium-Alloys Steel Co, Latrobe, Pa.* Grade 4650-A produces high-strength parts by briquetting and centering without resorting to secondary treatments more elaborate than simple hardening. Powder parts permit manufacture of gears and high-strength, high-production parts.

HIGH-SPEED STEELS — *Latrobe Steel Co, Latrobe, Pa.* Controlled sulfur additions provide internal lubricant that reduces friction in cutting process. Photomicrographs of the XL steels show alloy sulfides as light grey, slightly elongated spots uniformly distributed through the steel.

RESIN — *Borg-Warner Corp, 310 S Michigan Ave, Chicago 4.* High-impact thermoplastic styrene-type resin, called Cycolac, has the toughness of rubber and the surface hardness of most metals. Reported shatterproof.

SILICONE POLYMER—*Dow Corning Corp, Midland, Mich.* 410 Gum can be vulcanized with sulfur and blended with organic rubbers. Brittle points in range of —70 F. Useful to 400 F with proper blending.

COMPACTING POWDER — *National Radiator Co, Johnstown, Pa.* Plast-Iron B-212 for manufacture of mechanical parts (not bearings) where exceptionally high tensile and transverse strengths and wear resistance are required without need for high ductility.

CORROSION-RESISTANT MATERIAL—*Seiberling Rubber Co, Akron 9, Ohio.* Seilon, in sheets, plates, tubes, pipes, rods, and bars. Can be sawed, shaped, sanded, or drilled, stamped, turned.

STAINLESS STEEL TUBING—*Union Steel Corp, Union, NJ.* Produced in range of ¼ to 5 in. OD, with wall thickness of 0.010 to 0.154.

PLASTIC PIPE — *Carlon Products Corp, 10225 Meech Ave, Cleveland 5, Ohio.* Resistant to rot, rust and electrolytic corrosion. High dielectric strength, low water absorption, and non-flammable characteristics.

LAMINATED PLASTIC — *Hermes Plastics, 13-19 University Place, New York 3.* Gravoflex, for engraving with any pantograph machine; in strips, sheets, or cut nameplates in various thicknesses: 1/32, 1/16, or ⅛ in.

COBALT-BASE ALLOY — *Metals & Controls Corp, General Plate Div, Attleboro, Mass.* Haynes Alloy No. 25 (L605) sheet is now being cold rolled in thicknesses down to 0.0005 in. Corrosion resistance is high at temperatures up to 1500-2000 F. Cold working results in a wide range of hardness values, as high as R_c 55.

TITANIUM ALLOY—*Rem-Cru Titanium, Henry W Oliver Bldg, Pittsburgh 22.* A-110AT in sheet form in thicknesses down to 0.025 in. High-strength product is readily welded; has min tensile strength at room temp of 115,000 psi.

ALUMINUM ALLOY — *Kaiser Aluminum & Chemical Corp, 1924 Bway, Oakland 12, Calif.* K186, non-heat-treatable has been designed for weldability and adaptability to structural applications.

PRE-COATED COILS—*Andwall Mfg Co, Ixonia, Wis.* Aluminum or steel coils available in choice of several color finishes. Can be drawn, bent, pierced, or fabricated.

HARDFACING ALLOY—*Wall Colmonoy Corp, 19345 John R St, Detroit 3.* Chrome-cobalt-tungsten alloy No. 6, hardfacing rod for oxyacetylene torch work. Deposits of material can be ground to high finish.

MOLDING COMPOUND — *Dow Corning Corp, Midland, Mich.* Glass-filled silicone for molding high temperature parts. 301 may be molded with conventional equipment. Mold shrinkage ranges from 0 to 0.0035%.

SHEET WAX—*The Kindt-Collins Co, 12651 Elmwood Ave, Cleveland 11, Ohio.* Adhesive backing sticks to any clean oil-free surface. Softening point of wax is 166-168 F.

PARTS and MATERIALS—materials, processes

BEARING MATERIAL — *Booker-Cooper Co, Inc, 6940 Farmdale Ave, N Hollywood, Calif.* Operates with or without oil at temp of —120 to +500 F.

ALLOY STEELS—*Joseph T Ryerson & Son, Inc, Box 8000-A, Chicago 80, Ill.* Rycut 40 is a 0.40-carbon chromemoly steel with from 0.15 to 0.35% lead.

FILLER — *Smooth-On Mfg Co, 572 Communipaw Ave, Jersey City, NJ.* Metalset (101) aluminum compound for repairing castings, filling joints in sheet metal, building up surfaces of patterns, molds, dies. Adheres strongly to metal, particularly aluminum, and many other surfaces.

PLASTIC TUBING — *American Hard Rubber Co, 93 Worth St, New York 13, NY.* Product is inert, odorless, nontoxic; resistant to most inorganic acids and alkalies, and to many organic chemicals.

ALUMINUM STOCK — *Harvey Aluminum, Torrance, Calif.* Deep drawing under high pressure, works rod and bar with change in macrostructure responsible for unusual machinability.

BERYLLIUM COPPER—*Penn Precision Products, 501 Crescent Ave, Reading, Pa.* Mill-hardened Penntemp requires no heat treatment; available in strip form in 5 tempers, each offering a different combination of strength and formability.

FLAT METAL BARS—*Scovil Mfg Co, Waterbury, Conn.* Raised in weight and size from 2200 to 3100 lb. Non-welded brass coils rolled from this larger bar are approximately 40% longer; weight by inch of width is increased from 70 lb to 100.

PLASTIC PACKING — *Flexrock Co, Packing Div, 3600-A-Filbert St, Philadelphia 1, Pa.* Flexrock 403 is composed of shredded Teflon combined with suitable binders and lubricants.

EPOXY RESINS—*Bakelite Co, Div, Union Carbide & Carbon Corp, 260 Madison Ave, New York 16, NY.* BR-18774 and BR-18795 combine with four hardeners specially synthesized for them to form strong, lightweight products.

BERYLLIUM COPPER STRIP — *Penn Precision Products, Inc, 501 Crescent Ave, Reading, Pa.* Microstrip available in thicknesses from 0.001 to 0.032 in. with min tolerance from ± 0.0001 to ± 0.0004 in.

VACUUM-MELTED ALLOYS—*Vacuum Metals Corp, 70 Memorial Drive, Cambridge 42, Mass.* High-temp materials include high-purity nickel alloys for electronic tube construction, and Ferrovac-52100, a low-alloy steel for ball bearings.

LAMINATED ALUMINUM — *Laminated Shim Co, Inc, Glenbrook, Conn.* Shim stock in which laminations are bonded over entire surface is said to peel for adjustment.

TUBING STEEL—*The Babcock & Wilcox Co, Tubular Products Div, Beaver Falls, Pa.* B&W Croloy 9M for elevated temperature and pressure applications where high corrosion-resistance is desirable.

STEEL PLATE—*By-Products Steel Co, Coatesville, Pa.* Stock ½-in. thick measuring 200 by 100 in. to 15 in., measuring 140 by 80 in.

FLUOROCARBON PLASTICS—*Dixon Corp, Bristol, RI.* Sample kit includes specimen shapes of both Teflon and Rulon, (special bearing material).

VINYL SHEET—*Atlas Mineral Products, Mertztown, Pa.* Non-plasticized polyvinyl chloride Type 1 and Type 3 heat-weldable products are supplied in standard thicknesses, 0.0001 to 2 in.

CUTTING MATERIAL—*Firth Sterling, 3113 Forbes St, Pittsburgh 30.* Titanium carbide, contains neither tungsten nor cobalt. Remains much cooler than tungsten carbide grades when cutting steel without fluids.

MACHINE KEY STOCK — *DeVan-Johnson Co, Dept A, 500 Rathbone Ave, Aurora, Ill.* Mak-A-Key, in 12-in. lengths, 6 sizes: 3/16, ¼, 5/16, ⅜, 7/16, and ½-in. squares.

IRON ALLOY—*Taylor-Wharton Iron & Steel Co, High Bridge, NJ.* Tisco 150-Y combats abrasion in severest forms; can be heat-treated to 700 Brinell.

LEADED STEEL BAR—*LaSalle Steel Co, 1412-150th St, Hammond, Ind.* Super La-Led, free-machining, open hearth, in wide range of sizes. Product reportedly machines 80% faster than standard screw stocks.

DIE STEELS—*Latrobe Steel Co, Latrobe, Pa.* High-carbon high-chromium line has free-machining properties. Types include various oil-and air-hardening steels.

MAGNET WIRE—*Anaconda Wire & Cable Co, Muskegon, Mich.* Silicone-enameled, for use in electrical equipment operating at temp of at least 130 C. Dielectric strength is 1500 volts per mil.

ALLOY STEEL—*Babcock & Wilcox Co, Tubular Products Div, Beaver Falls, Pa.* Universal Cyclops Uniloy 19-9DL for use in equipment operating under conditions involving high stresses and temperatures is commercially available in limited size range in seamless tubular form.

CAST PLASTIC — *Cast Optics Corp, Riverside, Conn.* Cocor CR-39 is optically clear, said to be shatterproof, scratch-resistant, impervious to both heat and corrosive fumes.

FINISHING PROCESS—*Fromson Orban Co, 205 E 42nd St, New York 17.* Lubrite produces permanently brilliant surface finish on metal parts made of Lurium (high purity aluminum). Finished metal can be made to simulate gold, silver, platinum, brass.

BRAZING PROCESS — *Twigg Industries, Inc, Brazil, Ind.* For use with stainless steel and other high nickel alloys. Nicro-Braz alloy itself, when brazed in a dry hydrogen atmosphere with the parent metal forms an entirely new alloy having a R_c of 30 to 35, plus a much higher melting point than the original Nicro-Braz.

FORMED ALUMINUM—*Turco Products, Inc, 6135 S Central Ave, Los Angeles 1.* Chem-Mill process for precision forming of metal parts from aluminum sheets and forging stock by immersion in chemical solutions.

METALLIZER — *Emjay Maintenance Engineers, 327 Union Ave, Rutherford, NJ.* Pulverized aluminum is a plastic base, Kolmetal. Can be polished, ground, drilled, or bent without chipping.

MOLDED SILICONE RUBBER—*Stillman Rubber Co, 5811 Marilyn Ave, Culver City, Calif.* Services for compound formulation, mold-making, and acceptance of responsibility from blueprint to finished part. Rubber-to-metal bonds on surfaces 5 mu-in. on surfaces of 5 mu-in.

WATER CONVERTER—*Central Scientific Co, 1700 W Irving Park Rd, Chicago.* Quikpure is a 16-oz polyethylene squeeze bottle, bottom of which contains mixture of cation and anion exchange resins. Tap water poured into bottle is converted to distilled water in about one minute.

TOOL RECONDITIONING—*Manufacturers Cutter Corp, 275 Jefferson St, Newark 5, NJ.* HSS and carbide tools resharpened with procedure said not to draw tool hardness. Flutes of fluted tools are recut parabolically. Work done on individual contract basis.

BONDING PROCESS — *Minnesota Rubber & Gasket Co, Dept KP, 3630 Wooddale Ave, Minneapolis.* Rubber to a nylon bearing, injection molding and bonding within close tolerances are done in one operation.

METAL LAMINATE—*Metal Laminate Div, O'Sullivan Rubber Corp, Winchester, Va.* Sullvyne-Clad formed from bonding vinyl plastic on metal sheeting, then post-formed into finished product. May be bent, drawn, stamped, crimped, or punched.

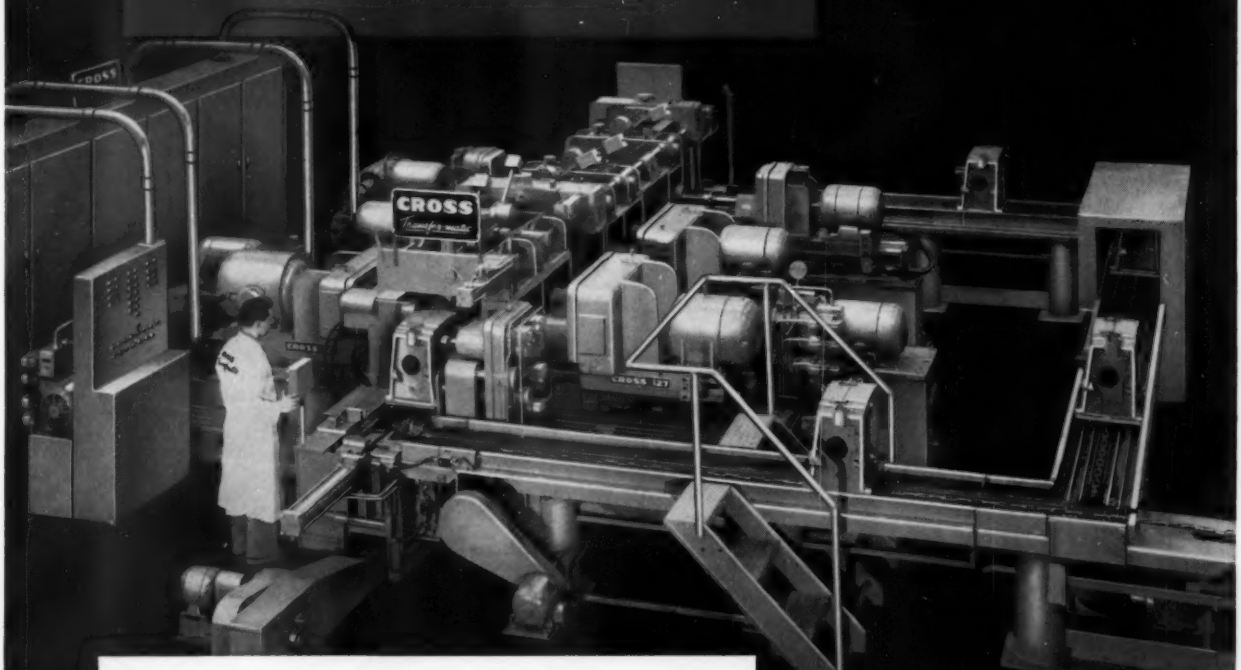
IRON POWDER PARTS — *Pow-Met Industries, Inc, 1460 Cincinnati St, Dayton 9, Ohio.* Obtained through compacting and processing specially developed electrolytic iron powders. Various alloys, common to steels, may be introduced; shallow, deep-cyanide, or gas-carburized cases are furnished to specifications; heat treatment of parts will also be performed to specifications.

TRACER TEMPLETS — *Template Reproduction and Engineering Co, 401 N Broad St, Philadelphia 8, Pa.* Process for producing tracer templets for use with profile-tracing machine tools uses direct contact reflex photographic method. Layout of 10X or 20X size is made on coated templet layout stock; contact reproduction is made on gage stock. Large reproduction is cut and filed to produce enlarged profile templet.

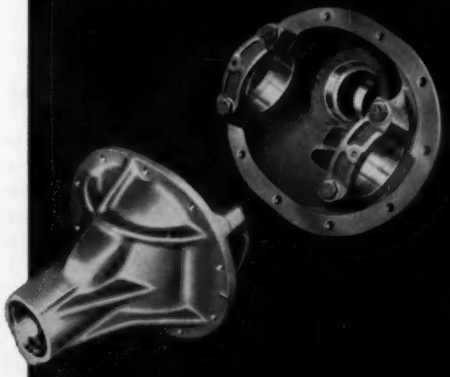
SHELL MOLDING PROCESS—*Bakelite Corp, Div Union Carbide & Carbon Corp, 260 Madison Ave, New York 16.* New process for precoating sand for shell molding is claimed to save 50% of resin content. Each sand grain is coated with molten BRQ-12244 Bakelite resin, and higher green strength, greater bond strength, and smoother casting surfaces are reported. To trigger final molding reaction, a catalyst in aqueous solution is added.

Another Transfer-matic by Cross

Machines Rear Axle Differential Gear Housings



- ★ Rough and semi-finishes pinion bores; rough bores, semi-finish bores and taps cross bores.
- ★ 155 parts per hour at 100% efficiency.
- ★ 9 stations—1 for loading, 4 for boring, 1 for tapping, 2 for indexing, 1 for visual inspection.
- ★ Pallet-type work holding fixtures.
- ★ Hydraulic power wrench for clamping parts.
- ★ Automatic transfer of fixtures from station to station.
- ★ Other features: Complete interchangeability of all standard and special parts for easy maintenance; construction to J.I.C. standards; hardened and ground ways; tandem drive for locating pins; hydraulic feed and rapid traverse; automatic lubrication; oil-mist lubrication for taps; drag-chain type chip conveyor.



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For the manufacturer who wishes to own his own presses but minimize his initial capital outlay, Verson offers a Customized Installment Program. It is called "Customized" because the payment plan is tailored to the buyer's own financial requirements rather than to a single fixed plan. Initial payments may be as low as 10 per cent of the purchase price with the balance payable over periods ranging from six months to five years. Further information on a plan to meet your needs will be furnished on request. Please outline your requirements.

Customized

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American Machinist REFERENCE BOOK SHEET

NICKEL-BASE ELECTRODES...I

Abstracted from "Tentative Specifications for Nickel and Nickel-Base-Alloy Covered Welding Electrodes" jointly sponsored by the American Welding Society and the American Society for Testing Materials.

Welds from electrodes covered by these specifications (ASTM designation: B295-54T and AWS designation: A 5.11-54T) are commonly used in corrosion- or heat-resisting applications. The specifications cover electrodes for shielded metallic-arc welding of nickel and nickel-base alloys individually to themselves and also for welding these materials to steel and for welding the clad side of nickel-base-alloy clad steels. Chemical compositions of the weld-metal deposits are given in Table 1. Minimum tensile strengths, as determined by the short-gage tension test, are given in Table 2.

CLASSIFICATION OF ELECTRODES

Details of the classification of the electrodes and their uses are taken from the appendix to the standard:

The mechanics of the numbering system are:

The letter *E* precedes the designation as with all AWS-ASTM specifications for arc-welding electrodes.

The first digit indicates the intended use of the electrode. The number *3* as a first digit indicates an electrode primarily intended for joining nickel or a nickel-base alloy to itself. A first digit *4* indicates it is an electrode primarily intended for welding a nickel or nickel-base alloy where steel will be diluted into the weld metal as in joining a nickel or nickel-base alloy to steel, overlaying a nickel or nickel-base alloy on steel, or welding the clad side of nickel or a nickel-base alloy clad steel.

The letter *N* follows the first digit to indicate that this is a nickel-base material.

The digit immediately after the letter *N* indicates the process for which the filler material is intended. Shielded metal-arc welding is indicated by using *1* as the digit immediately after *N*. The digits *4*, *5*, and *6* are used for oxy-acetylene welding, submerged arc welding and inert gas metal-arc welding respectively.

The last digit, either a number or letter, indicates the analysis of the core wire.

0 as a last digit indicates the Ni-Cu alloy, Monel,

1 as a last digit indicates nickel,

2 as a last digit indicates the Ni-Cr-Fe alloy, Inconel, or the 80-20 Ni-Cr alloy,

3 as a last digit indicates a Ni-Cu-Si alloy (available as bare wire only),

4 as a last digit indicates the Ni-Cu-Al alloy, "K" Monel,

9 as a last digit indicates the Ni-Cr-Fe-Ti alloy, Inconel "X,"

B as a last digit indicates the Ni-Mo alloy Hastelloy B, and

C as a last digit indicates the Ni-Mo-Cr alloy, Hastelloy C.

The chemical analysis serves to identify and control the electrode through analysis of weld deposit.

The short gage tension test, used only

table 1 . . . CHEMICAL COMPOSITION REQUIREMENTS OF DEPOSITED WELD METAL

NOTE 1.—*Analysis shall be made for the elements for which specific values are shown in this table. If, however, the presence of other elements is indicated in the course of routine analysis, further analysis shall be made to determine that the total of these other elements is not present in excess of the limits specified for "other elements" in the last item in the table.*

NOTE 2.—*Single values shown are maximum percentages, except where otherwise specified.*

Element	Ni-Cu E3N10	Ni E3N11	Ni-Cr-Fe E3N12	Ni-Cu-Al E3N14	Ni-Cr-Fe-Ti E3N19	Ni-Mo E3N1B E4N1B	Ni-Mo-Cr E3N1C E4N1C	Ni-Cu E4N10	Ni E4N11	Ni-Cr E4N12
Carbon	0.40	0.75	0.15	0.45	0.25	0.12	0.12	0.15	0.10	0.15
Manganese	4.00	0.75	1.50	4.00	1.00	1.00	1.00	2.50	0.75	1.50
Iron	2.50	0.75	11.00	2.50	11.00	4.00 to 7.00	4.00 to 7.00	2.50	0.75	4.00
Phosphorus	...	...	...	...	...	0.040	0.040	...	...	...
Sulfur	0.025	0.02	0.015	0.025	0.015	0.030	0.030	0.025	0.02	0.015
Silicon	1.00	1.25	0.75	1.25	1.00	1.00	1.00	1.25	1.25	0.75
Copper	remainder	0.25	0.50	remainder	0.50	...	...	remainder	0.25	0.50
Nickel	62.00 to 70.00[a]	92.00 min[a]	68.00 min[a]	60.00 to 68.00[a]	66.00 min[a]	remainder	remainder	62.00 to 70.00[a]	92.00 min[a]	70.00 min[a]
Cobalt	...	...	...	...	...	2.50	2.50	...	...	...
Aluminum	1.50	1.00	...	1.00 to 4.00	0.10 to 1.00	...	...	0.75	1.00	...
Titanium	1.00	0.50 to 4.00	...	1.00	1.00 to 2.75	...	...	1.50	1.00 to 4.00	...
Chromium	...	...	13.00 to 17.00	...	12.50 to 17.00	1.00	14.50 to 16.50	...	...	17.50 min
Columbium plus tantalum	...	...	1.5 to 4.00	...	4.0 × Si min[b]	...	...	3.00	...	1.5 to 4.00
Molybdenum	...	...	...	...	...	26.00 to 30.00	15.00 to 18.00	...	...	...
Vanadium	...	...	...	...	...	0.60	0.35	...	...	...
Tungsten	...	...	...	...	...	...	3.00 to 4.50	...	...	...
Other elements (total)	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50

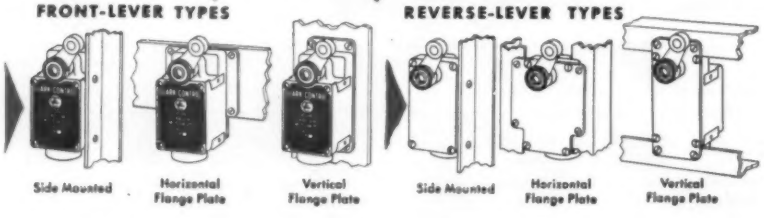
a Includes incidental cobalt.
b Except for 5/64 and 3/32 in. diameter electrodes, columbium plus tantalum may be 1.00 to 2.50%.

NEW!

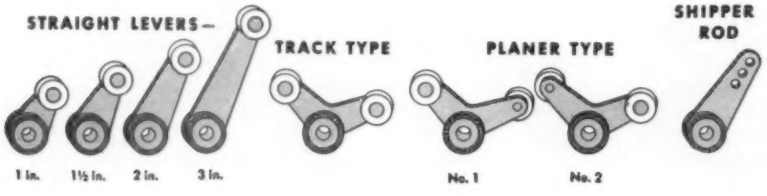
CLARK *Type DM* MACHINE LIMIT SWITCH

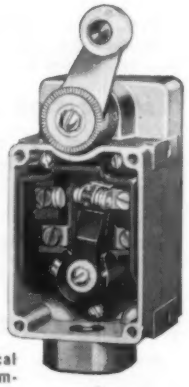
• This new heavy-duty limit switch is built with a minimum of moving parts, and with emphasis on simplicity of construction. The primary objective in its design is to provide dependable, accurate, trouble-free operation for a long life. All latch and trip-bearing surfaces are nylon to steel for minimum wear. All springs are in compression for greatest safety—they cannot be overloaded. This and other features make the switch as nearly fail-safe as possible.

Mounting Arrangements



Operating Levers





Nylon roller cushions impact, has low friction coefficient and long wearing qualities.

Reversible operating lever. Simple screw driver adjustment for reversing or positioning.

Heavy molded insulating chamber surrounds all live parts and provides ample wiring space for four No. 12 wires with Stakon connectors.

Areas subjected to arcing are protected by glass-melamine plates.

Electrical and mechanical sides of switch are completely isolated.

Nema Type 5 dust-tight, oil-tight enclosure of heavy die-cast construction.

Double-concentric overtravel springs in compression for fail-safe operation.

Return spring is in compression. Can be changed without tools to either side of arm, or removed for maintained contact.

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Engineered Electrical Control

1146 East 152nd Street • • Cleveland 10, Ohio

NICKEL-BASE ELECTRODES...II

for E3N1-electrodes, indicates the strength of the welded joint and to some extent the joint efficiency.

The guided-bend test is used to demonstrate the soundness of a weld and its ability to withstand a given amount of deformation. For the E3N1-electrodes, this test also demonstrates usability in a groove.

The guided-bend test (overlay) for E4N1-electrodes is used to demonstrate the soundness of a weld and its ability to withstand a given amount of deformation when steel is diluted into the deposited weld metal. These electrodes may be used to join a nickel-base alloy to steel or to weld the clad side of a nickel-base alloy and may also be used as an overlay electrode. Since it is impractical to establish testing procedures to cover all the complex combinations of use for such applications, any tests, other than those required herein, should be as agreed upon between the manufacturer and the purchaser.

The fillet weld test is intended to demonstrate the soundness of a weld and the usability of the electrode for making fillet welds.

table 2 . . . MINIMUM TENSILE STRENGTH OF WELDS
(Short Gage Tension Test)

Electrode	Base Metal	Tensile Strength, min, psi	Condition
E3N10	Ni-Cu	70 000	as welded
E3N11	Ni	55 000	as welded
E3N12	Ni-Cr-Fe	80 000	as welded
E3N14	Ni-Cu-Al	100 000[a]	age hardened
E3N19	Ni-Cr-Fe-Ti	115 000[b]	age hardened
E3N1B	Ni-Mo and Ni-Mo-Cr — plate under 3/16 in.	115 000	as welded
	Ni-Mo and Ni-Mo-Cr — plate 3/16 to ¾ in., incl.	100 000	
E3N1C	Ni-Mo and Ni-Mo-Cr — plate over ¾ to 1½ in., incl.	90 000	as welded

a Age hardened at 1100 F for 20 hr followed by furnace cool to 900 F and air or furnace cool to room temperature.
b Age hardened at 1300 F for 20 hr and air cooled to room temperature.

USES OF ELECTRODES

Usability characteristics are omitted because of the highly specialized nature of these electrodes.

E3N1-Series.—Electrodes for joining nickel-base metals to themselves.

E3N10—This is a Monel electrode for welding Monel metal to itself. ASTM Specifications B 163, B 164, B 165, and B127 cover Monel metal in the forms of condenser tubing, bar or rods, pipe or tubing, and sheet, strip or plate, respectively. It may also be used to weld Monel castings of suitable welding quality. E3N10 may also be used for welding other copper-nickel alloys such as 70-30, 80-20, and 90-10 to themselves. E3N10 electrodes have been used for welding "K" Monel, but the weld deposit does not respond to age hardening to the same extent as the "K" Monel base metal. The E3N14 electrode is recommended for this purpose.

E3N11—This is a nickel electrode for welding nickel or low carbon nickel to themselves or each other. ASTM Specifications B 160, B 161, B 162, and B 163 cover nickel bar or rods, pipe or tubing, plate, sheet or strip, and condenser tubing, respectively. The E3N11 electrode may be used to weld nickel castings of suitable welding quality. The weld deposit will not graphitize at temperatures above 600 F; therefore, these electrodes may be used for welding low carbon nickel which, because of its low carbon content, has minimum susceptibility to graphitization at temperatures above 600 F. Many joints between nickel and steel and overlays of nickel on steel have been made with E3N11 electrodes and have been satisfactory in service; however, the E4N11 electrode is recommended because of the superior ductility of deposited weld metal under these conditions.

E3N12—This is an Inconel electrode for welding Inconel to itself. ASTM Specifications B 163, B 166, B 167, and B 168 cover Inconel, condenser tubing, bar or rods, pipe or tubing, and plate, sheet or strip, respectively. The E3N12 electrode may be used to weld Inconel castings of suitable welding quality. This electrode may also be employed for welding Inconel "X" but the resulting weld will not respond to age hardening to the same extent as the base material. The E3N19 electrode is recommended for this purpose. E3N12 electrodes have also found extensive use for a number of dissimilar metals combinations. In applications where considerable stress will be developed, as in welding heavy plate material or in welding stiff structures in lighter gage material, the chemistry of the weld deposit should provide for an adequate columbium and tantalum to silicon ratio to prevent hot cracking. For this purpose, a minimum ratio of 4 to 1 is generally desired. If it is known that the application will contain either of these conditions of stress, it is recommended that the electrode manufacturer be consulted.

E3N14—This is a "K" Monel electrode intended for joining "K" Monel (MIL-N-17506 (Ships)) in the unaged condition. The weld deposit will respond to subsequent age hardening but not to the full extent of wrought base metal.

E3N19—This is an Inconel "X" electrode intended for welding Inconel "X" in the annealed or solution treated condition to itself, (AMS-5542). The weld deposit will respond to age hardening but not to the full extent of the wrought base metal.

E3N1B—This is a Hastelloy alloy B electrode intended for joining Hastelloy alloy B material to itself, for welding Hastelloy alloy B plate or sheet to steel backing (as in cladding), and for welding Hastelloy alloy B to other metals.

E3N1C—This is a Hastelloy alloy C electrode intended for joining Hastelloy alloy C material to itself, for welding Hastelloy alloy C plate or sheet to steel backing (as in cladding), and for welding Hastelloy alloy C to other metals.

E4N1-Series.—Electrodes for welding nickel and nickel-base alloys where the welds will be diluted by steel such as in joining a nickel-base alloy to steel, in overlaying a nickel-base alloy on steel, and in welding the clad side of nickel-base alloy clad steels. In such applications, it is important to obtain as little dilution of the weld with steel as possible by depositing a rather heavy bead and dissipating the digging energy of the arc against molten alloy metal rather than against steel.

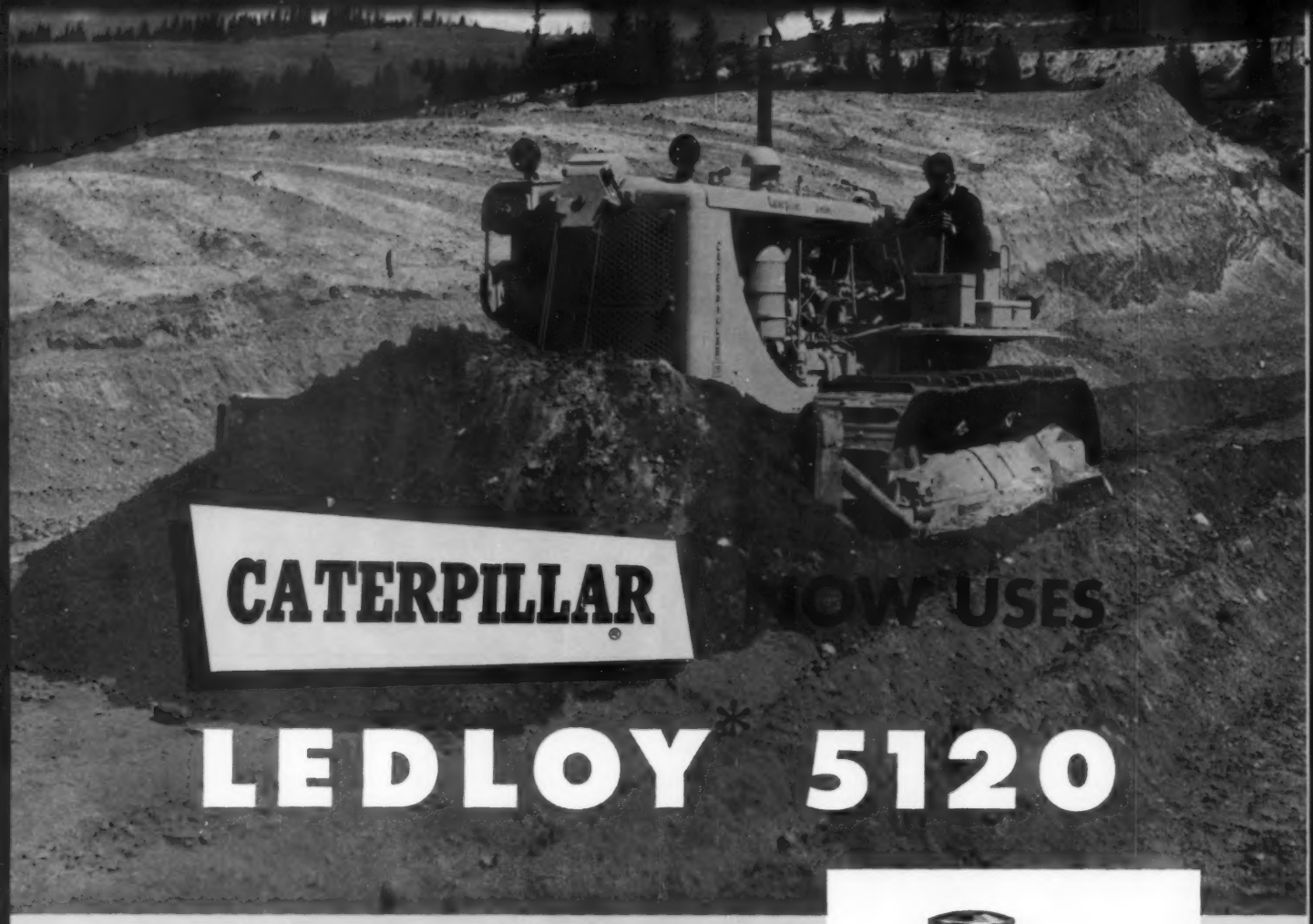
E4N10—This is a Monel electrode intended for welding Monel in the three instances above. The weld deposit, when properly made, will exhibit ductilities greater than 30 per cent. It may also be employed to weld Monel to itself in the flat position.

E4N11—This is a nickel electrode intended for welding nickel in the three instances above. The weld deposit, when properly made, will exhibit ductilities greater than 30 per cent. It may also be employed in all positions for welding nickel to itself.

E4N12—This is an electrode having an 80 Ni-20 Cr core wire. This electrode is recommended for use where dilution of the weld deposit by steel will lower the chromium content. If an E3N12 electrode were used in this instance, the chromium level might drop below a critical 12 per cent. If corrosion resistance in the weld is not a factor, the E3N12 electrode may be used. The E4N12 electrode is also used for the 80 Ni-20 Cr alloys. The columbium to silicon ratio of the weld deposit is important in this electrode as it is in the E3N12 electrode.

E4N1B—See *E3N1B*.

E4N1C—See *E3N1C*.



CATERPILLAR® NOW USES LEDLOY* 5120

Saves on Every Pre-combustion Chamber Assembly

In today's competitive market, any savings on a component is important, even on a product as large as the Caterpillar D8 crawler Tractor. Caterpillar Tractor Co., with an eye on costs, selected Ledloy 5120 for pre-combustion chamber assemblies in their diesel engines. As a result, machining costs have been reduced on each of the two parts that form the finished assembly. This reduction resulted from Ledloy's free machining properties, which reduced machining time and increased tool life.

Design called for copper brazing the two pieces together and nickel plating the entire assembly. *The Method:* The leaded steel was brazed and plated in the usual way, without special handling. *The Results:* Pre-combustion chamber assemblies made of Ledloy 5120 at a lower cost, met all requirements and are seeing service in Caterpillar-built machines around the world.

*Inland Ledloy License

Two component parts of the Pre-combustion Chamber assembly were machined from Ledloy 5120 cold drawn bars. Other leaded alloy steels and leaded carbon steels are available in all standard or S.A.E. compositions in any of our standard sections. Write for complete information about application of leaded steels to your product.

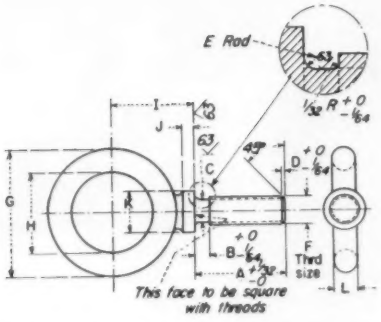
ARISTOLOY STEELS

COPPERWELD STEEL COMPANY
(Steel Division) WARREN, OHIO

SEND FOR FREE BOOKLET ON LEAD-TREATED ALLOYS

SHOULDER EYEBOLTS

M F BIANCARDI, manager, Safety Services Dept and C M GILLESPIE, asst engineer, Allis Chalmers Mfg Co



A new design of shoulder eyebolt and a new safe load table for angle loads have been adopted, after tests disclosed the reasons for failures of conventional types, both shoulder and non shoulder. These shoulder eyebolts are now required for shop use at the West Allis plants of Allis Chalmers and are recommended for products.

To use these shoulder eyebolts properly, the designer should:

1. Specify adequate size and depth of tapped holes (must be spotfaced and chamfered), particularly where eyebolts are the only method of handling pieces for machining and assembly.

2. Because of the complications involved in using eyebolts, consideration should be given to the use of properly welded or built-in lifting lugs for shop and customer lifting of the product.

REASONS FOR NEW DESIGN

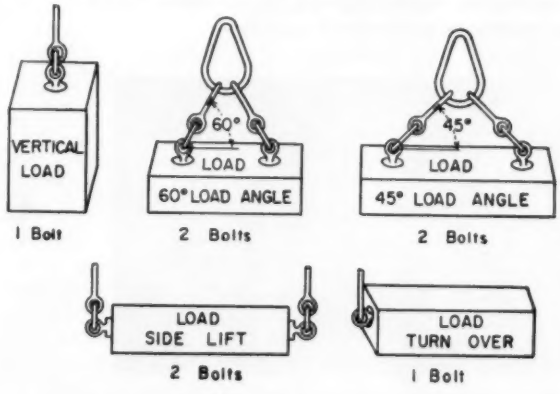
Investigation of unexplained failures of conventional eyebolts led to the conclusion that cracking occurred from concentrated bending stresses induced by angle loads, at thread root or junction of thread and unthreaded portion of shank. Sought was a bolt design that would increase tension stress and reduce bending stress in the shank under angle loads. Obviously, the solution was a shoulder bolt but the shoulder would have to be square with the shank, solid contact of shoulder and load would have to be secured by spotfacing the work, and the threaded shank would have to be shortened so that no bottoming in the hole could occur. Further refinements consisted of relieving the shank under the shoulder and using a radius to reduce stress concentration. New forged eyebolts had to be refaced.

Tests made of angle loading the new eyebolts indicated that, even though the new design is stronger than the conventional variety, the safe load tables must contain values lower than formerly.

DETAILED DIMENSIONS

F Threads Per Inch	Shank		Undercut			Eye			Shoulder		
	A	D	B	C**	E	H	G	L	I	J	K
¼-20	3/8	3/64	5/64	.185	1/32	3/4	1 3/16	7/32	13/32	1/8	1/2
⅜-13	11/16	1/16	1/8	.400	1/32	1 3/16	2 1/16	7/16	1 3/8	7/32	29/32
									1 7/16	7/32	7/8
¾-10	1	5/64	7/32	.620	1/16	1 1/2	2 3/16	5/8	1 7/8	9/32	1 1/8
								21/32	1 29/32	5/16	1 1/4
1 -8	1 3/8	3/32	1/4	.838	1/16	1 13/16	3 9/16	7/8	2 1/4	3/8	1 1/2
								7/8	2 13/32	13/32	1 9/16
1¼-7	1 3/4	7/64	9/32	1.064	1/16	2 3/16	4 7/16	1 1/8	2 7/8	7/16	1 7/8
								1 1/8	2 15/16	1/2	1 7/8
1½-6	2 1/8	1/8	11/32	1.283	1/8	2 1/2	5 3/16	1 3/8	3 1/4	7/16	2 1/8
								1 11/32	3 7/16	9/16	2 3/16
2 -4½	2 3/4	5/32	1/2	1.711	1/8	3 1/4	6 7/8	1 13/16	4 3/8	5/8	2 7/8
								1 13/16	4 1/2	3/4	2 7/8
2½-4	3 1/2	11/64	1/2	2.175	1/8	5	9	2	5 1/2	1	4

***Tolerances for dimension C are as follows: .185, .400 & .620 are + .000- .005, .838 & 1.064 are + .000- .006, 1.283 & 1.711 are + .000- .007, 2.175 is + .000- .008.*



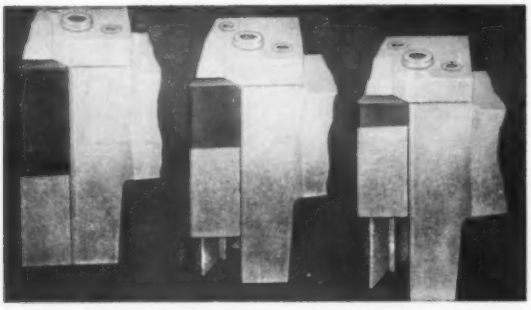
SAFE LOADS IN POUNDS FOR SHOULDER-TYPE EYEBOLTS

Size (Inches)	Vertical (1 bolt)	60° Load Angle (2 bolts)	45° Load Angle (2 bolts)	Side Lift (2 bolts)	Turn Over (1 bolt)
¼	270	94	60	70	70
⅜	1,260	400	260	280	280
¾	3,020	850	520	580	580
1	5,520	1,640	1,030	1,180	1,180
1¼	8,890	2,580	1,610	1,820	1,820
1½	12,900	3,680	2,300	2,560	2,560
2	23,000	6,620	4,160	4,600	4,600
2½	37,200	11,840	7,480	8,520	8,520

CUTTING TOOLING COSTS WITH THE CORRECT CARBIDE INSERT!

Style TBR Toolholder for triangular inserts with "Throw-Away" Length, "Half-Length" ¾" and Standard 1½" inserts. Toolholders are available for triangular, square and round inserts in more than 30 different styles and sizes.

Vascoloy-Ramet Corporation in addition to developing the New V-R Toolholder System has developed, in conjunction with this system, two new sizes of inserts, "Half-Length" 1½" inserts and "Throw-Away" Length inserts. In the V-R Toolholder, as the insert wears and becomes shorter, the bottom movable portion or elevator of the toolholder can be adjusted upward by turning the main screw in the top of the chip-breaker plate. Since no part of the insert is needed for holding or clamping, the toolholder permits using all of the carbide insert. Instead of using only about 50% of each insert you actually use more than 90% leaving only the minimum carbide necessary to support the cutting load properly.



As the carbide insert shortens from repeated sharpening the elevator is moved up by turning the main screw on top of the chipbreaker plate. This method of holding the insert permits using either Standard Length, "Half-Length" or "Throw-Away" Length inserts in the same toolholder.

The design of this new toolholder permits the practical use of inserts only half as long as standard 1½" inserts. These inserts are called "Half-Length" inserts. When you purchase two "Half-Length" ⅜" I.C. triangular inserts, instead of one full length insert, you get a total of twelve cutting edges. These six extra edges currently cost only an additional 70¢ over the price of one full length insert . . . or less than 12¢ for each additional cutting edge. When you are using the new "Half-Length" Inserts, the occasional massive carbide failure resulting from unexpected hard spots found in forgings or castings, costs only half as much, since you are breaking an insert only half as big.

If you are in the habit of giving a machine operator enough cutting edges to go through a complete shift without making a trip to the tool crib and if you are using full length ⅜" I.C. triangular inserts, your initial tool inventory, at current price levels, is $12.36 or $4.12 each. But if you were to use "Half-Length" inserts, your initial tool inventory would be only $7.23 or $2.41. In addition to these new "Half-Length" inserts V-R also manufactures all styles and sizes of toolholders with a head length designed for "Half-Length" inserts.

V-R Standard Length, V-R "Half-Length" and V-R "Throw-Away" Precision and Utility Blanks.

Even greater savings are possible with New V-R "Throw-Away" blanks. These blanks are available in two classes: Precision Class and Utility Class. Blanks of the Precision class are ground all over and are intended for use under those conditions where it is necessary to maintain accurate size after indexing. Utility class blanks, more economical in cost, are used where precision indexing is not required.

The relative savings with these "Throw-Away" inserts is tremendous. In quantity the full length inserts cost $4.12, the "Half-Length" $2.41. However, a "Throw-Away" Precision blank is 98¢ and the Utility is only 56¢. The insert best suited for a particular job depends on the work being done and the actual cost of tool reconditioning. If inserts can be reconditioned at a very low cost "Half-Length" inserts might be best. When all of the reconditioning costs are added together, it may cost less, because of the elimination of grinding, to use "Throw-Away" blanks. V-R also manufactures toolholders designed specifically for "Throw-Away" blanks, in all styles and sizes.

New V-R Toolholder for use with "Throw-Away" Precision or Utility "Throw-Away" Blanks.

For additional information on the New V-R Toolholder System and New V-R inserts ask for Toolholder Catalog VR-435A. Write the

VASCOLOY-RAMET CORPORATION

804 Market Street, Waukegan, Illinois

Talking Shop . . .

Orderliness

ACCIDENTS HAPPEN more commonly in cluttered plants—always have and always will. Just as neatness encourages accuracy, it encourages safety. Keep the plant clean and orderly, floors picked up and free of obstacles, passageways clear, tools not in use properly stored, edged tools in containers, moving parts of machines carefully guarded, and rubbish disposed of, and your accident frequency and severity will drop. Let your supervisors and foremen know that the safety record in their departments is an integral part of their own records of success or failure. Unless the foreman campaigns for safety, continuously and actively, the program will fall flat, no matter how clean and orderly the plant. And you too must always be safety-conscious—to keep him that way.

Boss Ket's "Forecast"

CELEBRATING its Golden Anniversary this month (see next page), it was inevitable that SAE would concentrate on a look ahead, and that Charles F Kettering, the brilliant and puckish sage of the industry, would be drafted for the principal speech.

Boss Ket, saying it was perfectly silly to try to predict the future, proceeded to sketch briefly the outline of the past 50 years and invited the audience to project the curves another 50 years. "You'll be amazed at how much you missed it," he said.

Expressing his devotion to practical, experimental engineering, he cited the argument with a man who said of one of Ket's ideas, "It won't work."

"You may be right, " replied Ket, "but I'll bet you $5 that it won't work the way you think it won't." He also recalled the reaction of electrical engineers to one of his earliest inventions: "He's profaned every fundamental law—no wonder his self-starter works."

Horsewhipped Horsepower

THE CURRENT horsepower race took quite a beating from Kettering in his SAE talk. Discounting about 50% for misrepresentation, he said, the 6 million new cars this year will add about 600 million new horsepower. In the past 50 years, automotive horsepower has risen from 1 *million* to 6 *billion*, he calculated.

Boss Ket even laid the food surplusses at the door of the auto industry. Every time you get rid of a horse, you can feed another 4½ people, he said, and the auto and tractor have dropped the horse population by 20 million in the past half-century. "We've been raising food instead of feeding horses," he said.

In a more serious vein, Kettering reminded his listeners that most of the world is still underfed, despite these efforts, and predicted that science would develop new methods of producing food to solve the world food shortages.

Nothing Special

BISSELL Carpet Sweeper Co, Grand Rapids, Mich, forms 0.028 and 0.035 gage CRS into tubing. The steel comes in coils 36 in. wide, is slit into 2.79-in. widths for ⅞-in. tubing, and 1.56-in. widths for the ½-in. size. Then it's curled in a 12-stand mill and welded in a 75-kva Yoder unit. In flash-trimming the hot tube at 50 to 60 sfpm, steel tools lasted for only 1000 ft, a special carbide tool for 11,400 ft. And changing took 10 to 15 min. Now a ¾ x ¾-in. off-the-shelf bit of Carboloy 370 is doing the job at less cost, producing 12,500 to 13,000 ft (a day's run) without change. Tools have an effective angle of 5° end relief, 2° back rake, and radius to suit tube diameter.

High-School Physics

"EXPERIMENTS by Fisher Body engineers reveal that if a car with a white top and another with a black top are parked side by side in the sun, the lighter-topped car will remain 15° cooler inside." So reads a recent GM release. Apparently the engineers missed that classical high-school physics experiment in which a square of black cloth and one of white are placed side by side in the snow. Perhaps they're graduates of Southern colleges, where there is no snow, because they seem to forget that in the winter, the black-top car will be 15° warmer.

Don't Be Too Sure

CURRENT DISCUSSION of flying saucers seems pointless based on our present knowledge, but therein lies a hook. 2000 years ago Aristarchus of Samos ventured the silly thought that the earth revolves around the sun, but the authorities of his day called him down. And Anaximenes 2500 years ago believed that moonlight was nothing more than reflected sunlight, but the experts then knew that all celestial bodies were fixed to a sphere or dome and shone by their own radiation. At the same time a Greek school proposed that matter was made of atoms with holes around and between; this too was thought absurd. Eratosthenes of Alexandria proposed about 200 BC that the earth was spherical (not flat) and its circumference 24,000 miles. (He was 800 miles off). He also conjectured that the Indian and Atlantic oceans were connected and surrounded an island made up of Europe, Asia and Africa. He therefore reasoned that India could be reached from Spain by sailing around Africa and that the Atlantic ocean might be divided by land running from north to south. Columbus, you will recall, came up with the same idea 1700 years later and got the credit for it. Copernicus, 400 years ago, suggested that the earth rotated on its own axis while its center of gravity revolved about the sun, its center, but everybody knew that could not be true.

These all happened to be true theories, although they could not be proved at the time. There have been more false ones, and the primary problem is to distinguish between them as best we can. Says Vincent Cushing of Armour Research Foundation: "False theories are not useless . . . they may point out the direction of further inquiry . . ."

News of Metalworking . . .

THE '56 DEFENSE BUDGET: We'll Hold the

No cut in military hard goods buying—that's the good news for Metalworking in President Eisenhower's 1956 budget—designed to keep the business pot boiling for the next two years

WASHINGTON— The budget for the fiscal year beginning next July launches a program designed to do two things that should make industry optimistic about business prospects for the next two years.

Two Commitments

First, President Eisenhower has committed his administration to a big bundle of public works, social welfare and like programs calculated to keep business prosperity high, and economic growth on the upswing.

Second, he's committed to maintaining the present total of military expenditures for hard goods. This means no reduction in orders that mean business for thousands of Metalworking firms.

A New Goal

Budget-cutting, as such, is taking a back seat to a new Eisenhower goal: designing and selling to Congress federal programs that will keep business growth close to its potential. And this in turn is counted on to bring in additional tax revenues to help in balancing the budget.

In 1954, the budget called for $67.8 billion spending, with a $3.1 billion deficit. In 1955, it is estimated at $63.5 billion spending, with a $4.5 billion deficit. For fiscal 1956, it will be about $62.4 billion, with a deficit of $2.4 billion. Out of this $35.7 billion will be spent for defense in fiscal 1956, representing an increase of about $1.5 billion over fiscal 1955.

Budget May Be Upped

President Eisenhower is likely to get all the money he's asked for to buy military hard goods in 1956. In fact, it's entirely possible the Democrats in charge of the armed services committees may try to make political hay by upping the appropriations.

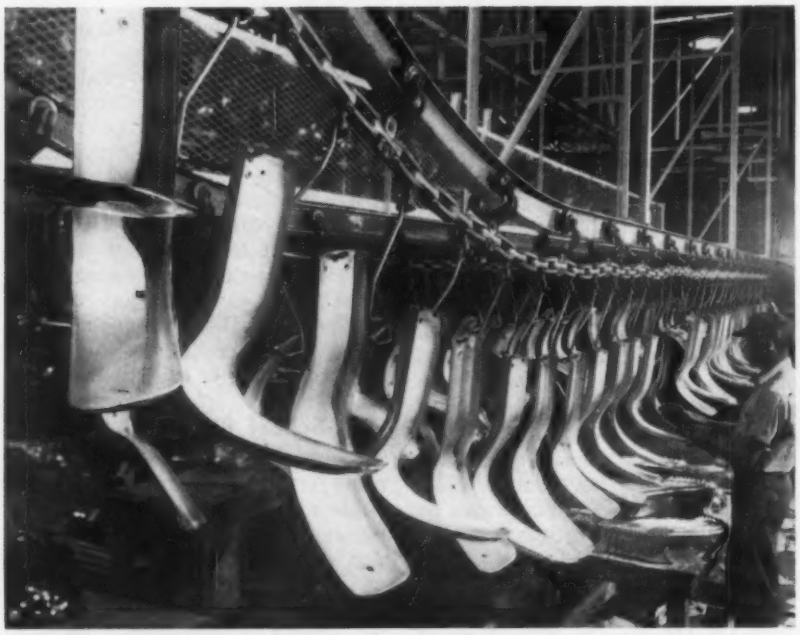
The Hitch

There's one hitch in this, though, that may take the military's spending down a notch or two from these figures. In their calculations, Eisenhower and Wilson are putting down spending at $34 billion—$1.75 billion

Automatic Plating Line Turns

Electronic system . . .

EACH OF THREE AUTOMATIC LINES has its own control panel. Machines have 25,000 electronic parts



controls completely automatic plating . . .

STRAIGHT-LINE MACHINES take carrier loads of 335 tons each. Steel bars go through a 2½-hour, 31-step process of cleanings, washings, rinsings and platings. They are hand loaded and unloaded — the only non-automatic processes

Line on Hard Goods Procurement

less than the total they got when they added up the component spending programs. The explanation is that "savings, slippages and program adjustments," which can't be predicted or allocated at this time, will put actual spending for the year about 5% below what it would be if the services carry out the spending programs they have on the books. These savings, if realized, would amount to a reduction of an average of about $33 million in military spending each week.

The Breakdown

Here's how military spending shapes up for fiscal 1956:

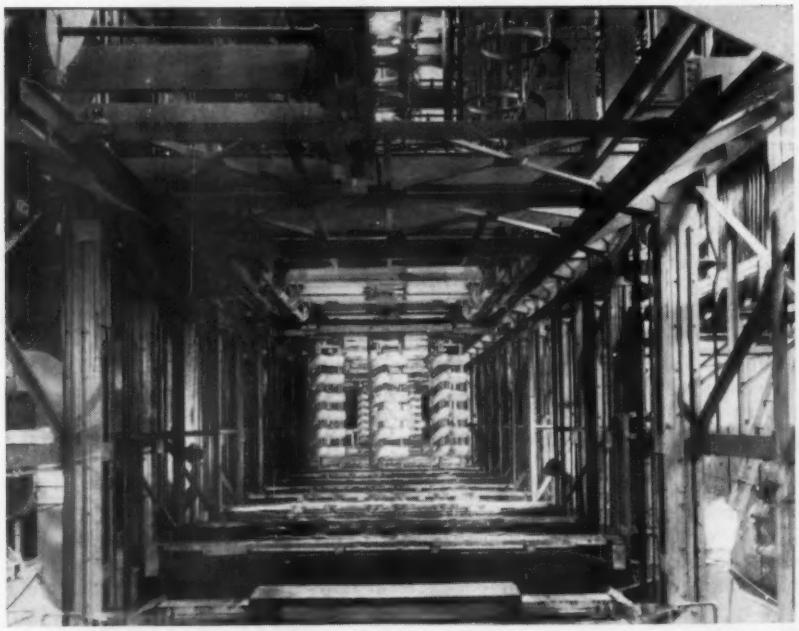
- Defense Dept's $35.7-billion program consists of about one-third, or $12.7 billion for major procurement such as plants, ships and tanks—with aircraft totaling about $7.5 billion.

(continued on p 276)

MILITARY SPENDING IN EISENHOWER'S 1956 BUDGET
(millions of dollars)

	Estimated Expenditures		New Requests
	1955	1956	1956
DEFENSE DEPT			
Aircraft	7557	7550	6064
Ships	888	999	1317
Other	4182	4169	2143
Total procurement and production	12,627	12,718	9524
NAVY			
Aircraft, related procurement	1900	2000	753
Ship construction	57.8	55	not known
Shipbuilding, conversion	755	882	1317
Navy military procurement		425	495.5
AIR FORCE			
Aircraft, related procurement	6400	6150	6100
Major procurement other than aircraft	900	925	400
ARMY			
Pocurement and production	2143	2316	not known
GEN. SERVICES ADMIN.			
Strategic and critical materials	966.4	755.6	521.5
MARITIME ADMIN.			
Ship construction	12	46	102.8

Out One Bumper Every 3 Seconds



. . . on three lines at Chevrolet Livonia

LARGEST AUTOMATIC PLATING FACILITY IN THE WORLD, Chevrolet Livonia's operation comprises three lines, each 535 ft long, with openings 17 ft wide by 25 ft high. Plating plant is on two levels

LIVONIA, MICH — Well on its way into full operation, the world's largest automatic plating facility, at Chevrolet's new spring and bumper plant here, can produce an automobile bumper every 3 seconds.

The installation plates raw stock in three straight-line machines totaling nearly one-third of a mile in length. The only non-automatic operations are hand loading and unloading of bumpers.

Independent Operation

The three plating lines operate independently of each other and can turn out a total of four acres of plated surface in 16 hours.

An "electronic detective" uses 710 miles of wiring to keep tabs on some 25,000 control points along the lines. Upright illuminated panels carry a complete electrical diagram of each machine's controls, wired to the control point itself. Thus, by using a test probe on the panel, an electrician can tune in on each of the control points and instantly find out how it is operating.

BUDGET (Continued)

● The Air Force is getting a bigger share of the budget for aircraft, asking about $500 million more for plane procurement than it is now getting—that is if Congress goes along. This would give the Air Force upwards of $5 billion to commit, while the amount of Navy plane buying will stay about the same as for the current year—$1.5 billion.

More Guided Missiles

● On guided missiles, the Air Force is getting the biggest chunk of the new money—and the biggest increase in the budget. It can obligate about $127 million more for missiles next year than this, amounting to about a 20% increase. Navy, too, finds its missile money up about $73 million over 1955, for a 20% increase.

● Army, on the other hand, has less for missiles in next year's budget than it has this year—but still more than Navy.

● Shipbuilding plans for fiscal 1956 call for a number of starts on Navy ships, including a fifth Forrestal-class carrier.

● Maritime administration's ship program (part of the Commerce Dept budget) calls for $103-million new contracting authority. This, added to matching funds, from private industry, should push ship construction up by an additional $225 million, on top of the $400 million program now underway. This, the President thinks, "should maintain a substantial nucleus of peacetime shipyard employment."

Overseas Aid Increased

● Military assistance to our allies is due for an increase in orders for hard goods—with spending for planes, ships and vehicles to be around $3 billion. Most of this will be financed from available funds, but calls for another $1.4 billion.

Reserve Tools

● Reserve tool program of $100 million is still in the Wilson budget, but so far no orders have been placed, and no funds disbursed, although plans are farther along than they've ever been. The budget message says the Defense Dept expects to spend $45 million of the $100 million this coming fiscal year, and will actually accept delivery of this equipment and mail out the checks.

WHERE THE DEFENSE BUDGET MONEY GOES

(millions of dollars)

	Fiscal 1954 (actual)	Fiscal 1955 (estimated)	Fiscal 1956 (estimated)
AIR FORCE			
Aircraft	3326	4520	5050
Guided missiles	338.6	476.7	603
Industrial mobilization	10.4	109	22.1
Electronics and communication equip.	325	419	594
Training equip.	46.6	81.1	48.1
NAVY			
Aircraft	678	1525	1567
Guided missiles	166.3	341.2	414.5
Aerial electronics	15.5	24.9	32.6
Marine electronics	19.2	54	10
Shipboard electronics	5.6	43	74.5
Aviation training equip.	14.4	39.5	18.9
Aircraft modernization	3.9	42.6	39
ARMY			
Guided missiles and ammunition	860	941.8	578

Brown & Sharpe Sells Hob Business To Barber-Colman

PROVIDENCE, RI—Brown & Sharpe Manufacturing Co of this city has sold its hob business to Barber-Colman Co, Rockford, Ill, manufacturers of machine tools.

Included in the sale were all machines and tools used in the manufacture of hobs as formerly listed in the Brown & Sharpe catalog, and in manufacturing of hobs to special order. The manufacturing equipment used for this purpose is now in the process of removal from Brown & Sharpe's plant in Providence to Barber-Colman's plant in Rockford, where it will be used to augment that company's present hob manufacturing facilities.

NEW TOOL MART FOR THE EAST:

New York's Wanamaker Store to Become Permanent Exhibit Center

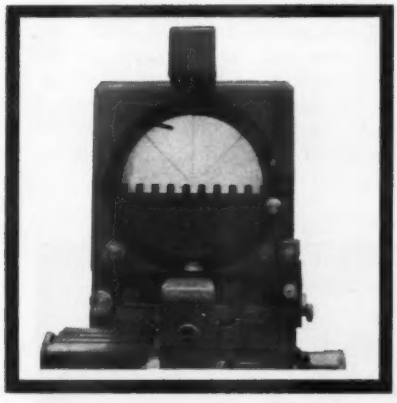
NEW YORK—One of New York's retail trade landmarks, the former John Wanamaker department store, will become a permanent exhibition center for domestic and foreign machine tools on or about March 1.

The two store buildings, one with more than 1-million sq ft of floor space, and the other with about 500,000 sq ft, located on West 8th St in New York's Greenwich Village and connected by a bridge and underground tunnel, will house permanent machine tool exhibits and exhibitor offices. Both buildings have almost unlimited ground floor loads to accommodate heavy machine tools, but upper floor loads will have to be limited to smaller or lighter units because of a 150-lb-per-sq-ft limit.

Heavy duty power lines, compressed air facilities and additional water supplies are being or will be installed to accommodate machine tool operation under power. The former Wanamaker warehouse two blocks away will have 245,000 sq ft of space available for storage or stockpiling of machines. A garage is being constructed under the main building for customer parking and to facilitate loading and unloading of tools. Some 20 heavy duty freight elevators are available to carry machines and equipment to the various floors.

The Wanamaker properties were purchased recently, when the store announced it was going out of business, by a syndicate headed by David Rappaport, New York realtor. Mr Rappaport has turned over administration and rental of exhibit space (at $2 per sq ft per year) to G B Schwarz of Hillyer & Bell, New York real estate firm.

Saved . . . 296 pieces per thousand!



Like many another manufacturer, the Hoover Company, Canton, Ohio, has its rejection problems. A typical one involved a flexible, rubber-like "litter picker" used in its vacuum cleaners. Although tolerances ranged from .085″ to .101″, rejects ran as high as 30%.

To solve this problem, Hoover employed a Kodak Contour Projector to measure the parts, plotted results in accordance with modern methods of statistical quality control. Based on these studies, alterations were made in the cutting tool and the holding fixture for the part. Rejects dropped from 30% to less than ¼ of 1%. Savings amounted to 296 pieces per thousand.

"Optical gaging with the Kodak Contour Projector," say Hoover engineers, *"eliminated incorrect readings caused by mechanical distortion of the parts. In addition, optical methods of measurement proved from 4 to 5 times faster than conventional gaging techniques."*

Your own production measurement or inspection problem may similarly be solved by optical gaging with a Kodak Contour Projector. To find out more about it, send the coupon for your copy of "The Kodak Contour Projector."

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News of Metalworking . . .

SAE TALKS: Automation, Jets, Plastics, Smog

50th Anniversary Meeting has its share of crystal gazing, but includes frank attack of basic industry problems

DETROIT—Opening its Golden Anniversary year, the Society of Automotive Engineers took a long look at future possibilities in such basic items as automobiles, tractors, and aircraft at the annual meeting here Jan 10-14. They also examined the current developments and future chances for gas turbines and atomic energy.

But the technical sessions combined with this crystal gazing a hard look at such immediate and diverse problems as the implications of automation production of jet engines, plastic truck bodies, and the dangers of exhaust.

More Machine Tools

Automation in the auto industry will create more jobs in the machine tool industry, said G G Murie, pioneer automation designer at Ford Motor Co. Expanding requirements for complex automation equipment will create many higher skilled jobs in machine tool, electronic, and other industries building the automated factories, he predicted.

Employment Reshuffle?

Beyond this effect, Mr Murie said that the effects of automation would be evolutionary, causing a gradual shifting of employment from dying industries to new industries as the economies of automation raise the standard of living at an uprecedented rate.

The willingness to make such shifts is essential to the American economy. "It will be a sad day for America if the time ever comes when we are locked in our present jobs," he concluded.

Ford's Procedure

Earlier, he outlined the procedure followed at Ford in automating production lines. In many cases it was found that the right type of automation equipment costs little more than the standard equipment which could be considered a minimum requirement.

The extent to which any company can adopt automation is determined by two economic and one mechanical consideration, said W C Newberg, president of Dodge Div, Chrysler Corp. These factors are: initial cost, reliability, and savings.

Automation's Savings

The savings of automation are not all measured in terms of manpower, Mr Newberg said. Often benefits in increased safety, reduced space, or better quality are the main results from automation.

Dodge is now building 2400 V-8 engines a day in the same area that was formerly required for building 1500 6-cyl engines a day. This is not only a 60% increase in the number of engines, but the engines have more parts.

"Automate or Die"

Citing the basic rule that has been repeatedly proven of more efficient production resulting in more jobs, Mr Newberg said, "But whether we are for it or against it, automation is here and it is here to stay . . . If we fall behind, we will find our places taken by others with more foresight and greater adaptability . . . In the big economic picture, the economics of automation are harsh, but simple: automate or die."

Chrysler is working on automatic assembly operations, Mr Newberg said, citing automated welding at the Nine Mile Press Plant, but is still a long way from automatic assembly of complete cars.

Ford's Turbine Entry

Ford has entered the experimental turbine sweepstakes with a regenerative free turbine it was reported by Albert H Beaufrere, manager of the gas turbine department. Work at this time is entirely on development and improvement of components, not the introduction of a complete engine.

Detailed performance data on experimental components were reported, providing the beginning of knowledge on such factors as the effect of pressure on fuel economy.

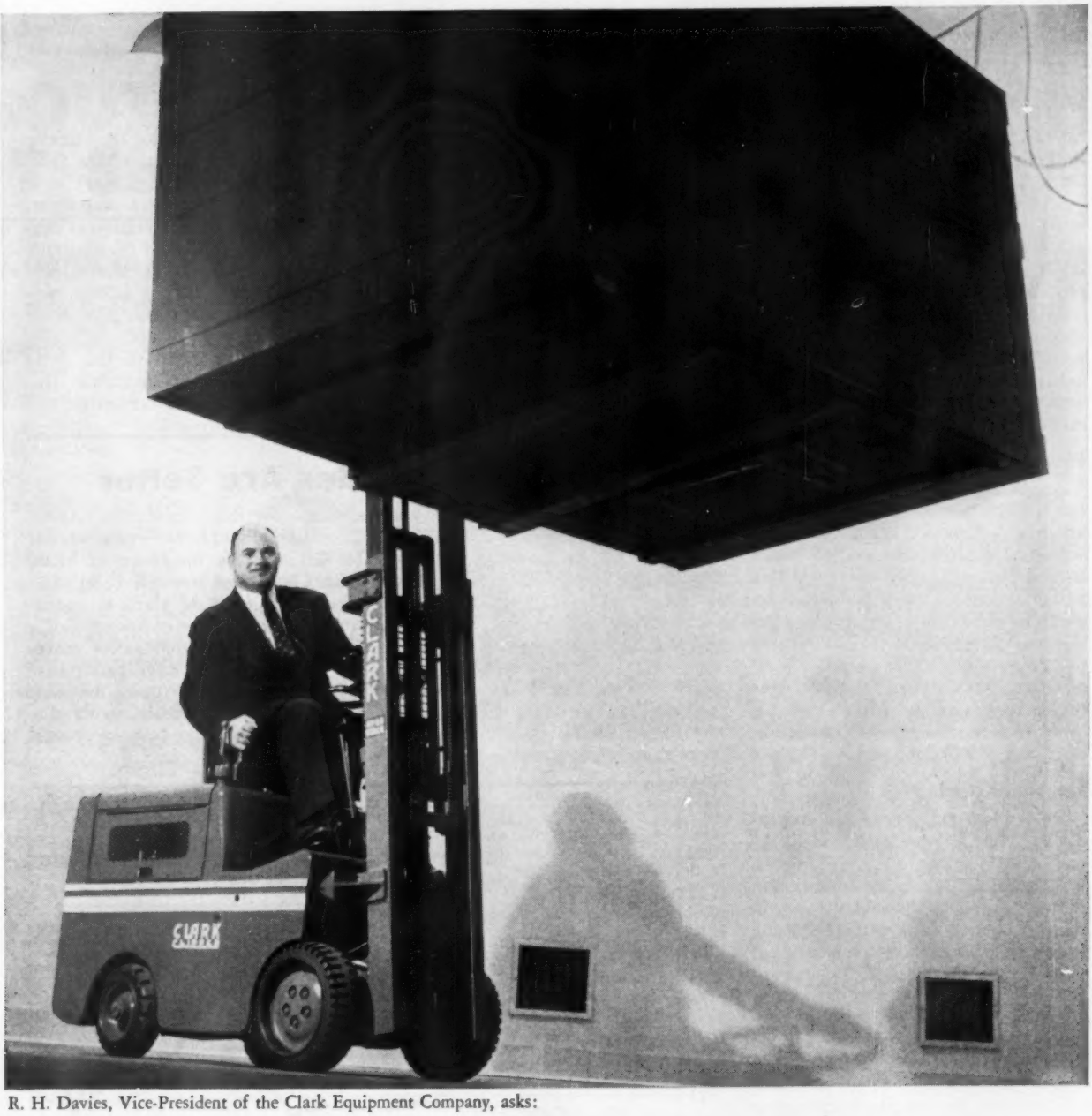
Atomic Energy Potential

Possible uses of atomic energy in the automotive industry were reviewed by A Tammaro, AEC asst gen mgr for research and industrial development. Predicting that by 1965 one power plant in every ten new ones will be powered by the atom, he pointed out that of 68 industrial companies studying atomic power there was only one from the auto industry. "Industry cannot assume that Government laboratories

New SAE Officers

PRESIDENT
C G A Rosen
Consulting engineer
Caterpillar Tractor Co.

VP PRODUCTION
Paul A Miller
General Mfg Manager
Parts & Equipment Div
Ford Motor Co



R. H. Davies, Vice-President of the Clark Equipment Company, asks:

"Do you know this famous weight lifter?"

"You've seen these mechanical muscle men all over the country," says R. H. Davies. "Clark builds them to lift up to 13 tons at a clip!

"When Kansas City was hit by a recent flood, most of their fork trucks were damaged. Clark dealers are among the best equipped in the country. But when ten or fifteen companies needed replacement parts—and *fast*—the demand was unprecedented! We shipped carburetors, distributors and other essentials by Air Express from our Jackson, Mich. service headquarters — and they arrived the same day!

"Our sixty dealers coast to coast know its speed and reliability. We average 5,000 pounds a month by Air Express.

"What's more, most of our shipments *cost less* by Air Express. For instance, a 25-lb. shipment by Air Express from Jackson, Mich. to Kansas City costs us $6.45 — that's $3.50 less than by any other air service."

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SAE MEETING (continued)

can and will provide all the preliminary data that will be needed," he said.

If the auto industry is interested in entering the atomic field, its engineers must go back to school and learn the basic elements of nuclear physics, he warned.

Although the auto industry is making use of radioisotopes, Mr Tammaro expressed doubt that it was getting its share of the estimated annual savings to industry of $100 million.

Plastic Truck Bodies

Applications of reinforced plastics for truck bodies were examined by another symposium. Walter Herfurth described the 20 plastic-bodied trucks United Parcel Service is trying. One advantage is that a translucent top gives interior illumination for sorting packages. Repair of damaged bodies does not appear to be a serious problem. However, there was major disagreement about the relative economies in mass production of plastic and steel bodies.

Jet Blade Production

Reviewing their experience in producing 70 million blades and buckets, A T Colwell, vice pres, Thompson Products, Inc, revealed that reinforced plastic blades are in the development stage. The molding is more difficult than in conventional glass-reinforced plastics. Closer control is required in die design, of pressures, temperatures, and prelayup phases. Plastic blades will be difficult to inspect adequately.

Mr Colwell reported that the Hautau machine for complete machining of the inside of stator casings (the "Jet Bore," *AM*—Apr 26, '54) which removes 125 lb of metal in 10 min is now through its development and is serviceable equipment.

Smog and Exhaust

An exhaustive symposium tackled the special problems of Los Angeles county and the possibility that they may become more widespread. Hydrocarbons, the major source of danger in smog, are dumped into the LA air from auto exhaust pipes at the rate of 1200 tons a day.

The Los Angeles Story

Elimination of all other sources of pollution will not reduce the Los Angeles hydrocarbon content below the critical level. The Air Pollution Control District is recommending a goal of 90% removal of unburned hydrocarbons from exhaust under heavy traffic conditions.

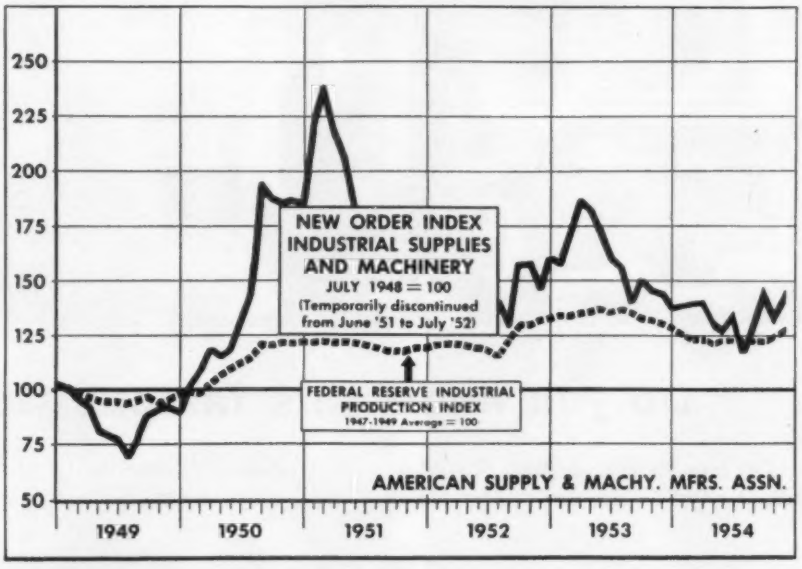
Reports from General Motors Research Laboratories by F G Rounds, P A Bennett, G J Nebel, J T Wentworth, and W A Daniel indicated the reasons for higher hydrocarbon emission under idle and deceleration have been determined. Unburned hydrocarbons can be sharply reduced during deceleration by admitting additional air and fuel to the intake manifold or by shutting off the fuel.

Engineering departments are now working on carburetors based on these researches and an optional carburetor reducing waste hydrocarbons an average of 30 to 50% seems likely in the near future. This carburetor would, of course, give more efficient utilization of fuel.

As one speaker put it, the complete elimination of unburned hydrocarbons remains a challenge.

When Softer Blades Are Better

DETROIT—Better life from Type 403 stainless blades in General Electric's J47 jet engine has resulted from using a softer blade. This startling fact was reported at the SAE national meeting by E M Phillips and R E Weymouth of General Electric. Although the blade of 32 to 38 R_c hardness has higher fatigue strength, the blade of 20 to 26 R_c has higher damping capacity that more than offsets the loss in fatigue strength for this application. About 20 million blades have been produced by GE and the incidence of blade failure has been reduced 75 to 85%. (Failure of a single blade in operation can destroy the compressor of a jet engine.) Although softer material doesn't always have better machinability, in this case the soft blades did prove easier to handle. Savings in processing cost are at least $50 per engine.



ASMMA's Monthly Index Equipment Orders on Upswing

FOURTH QUARTER NEW ORDERS for industrial supplies and machinery were at near-peak levels for 1954, as shown on the American Supply & Machinery Manufacturers' Association New Order Index. After hitting 1954's low spot in July, orders rose to the year's peak in September, dropped off in October, and by November's end were well on their way back to the September peak. The Index measures the flow of orders received by Association members, who are makers of production and maintenance equipment, tools and supplies, selling through industrial distributors. November orders were 46% above July 1948, Index's base month

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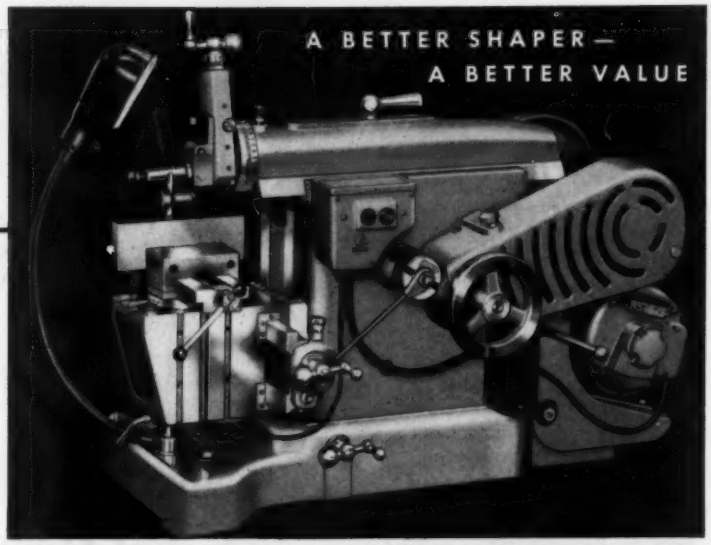
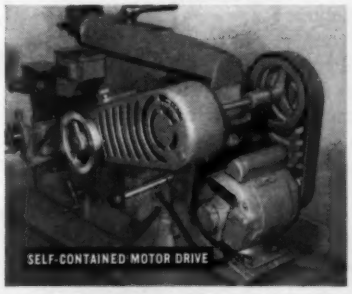
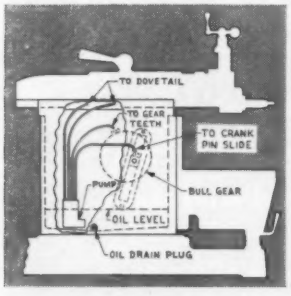


Compare These Value-Adding Features:

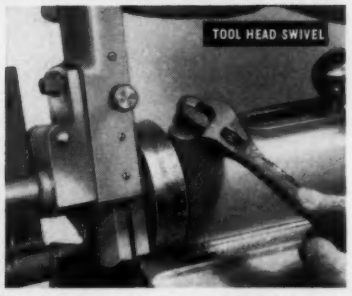
- Extreme precision for the most exacting tolerances.
- Convenient controls for easy handling.
- Ample bearing surfaces assure rigidity and durability.
- Powerful built-in V-belt motor drive.
- Smooth, quiet operation at all speeds.
- Quick acting belt tension release for changing speeds.
- Table sliding support shoe.
- Convenient length of stroke adjustment graduated 0 to 7".
- Reversible power cross-feeds .002" to .012".
- Graduated eccentric indicating power feed in thousandths.
- Swivel vise graduated in degrees mounts on top or side of table.
- Swivel tool head graduated in degrees, locks at any angle.
- Price $551 f.o.b. factory, less motor. Time payment terms available.



ONLY 7" Shaper with Pressure Lubrication



Pressure lubrication of ram dovetail bearings, bull gear teeth and crank pin slide bearings keeps wear to a minimum, helps absorb shock of intermittent cuts. Flood lubrication of all other important bearings.



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Fellows Stretches Its Financing to Fit 10-Year Depreciation

Adopts CIT plan to step up machine instalment terms from 3 to 10 years

SPRINGFIELD, VT — A stretch-out in its instalment plan from three-year to 10-year terms is announced by E W Miller, president of Fellows Gear Shaper Co. Monthly instalments will be so tailored that each year's payments will approximate the amount that can be depreciated that year under the new fast depreciation setup.

Replaces Leasing

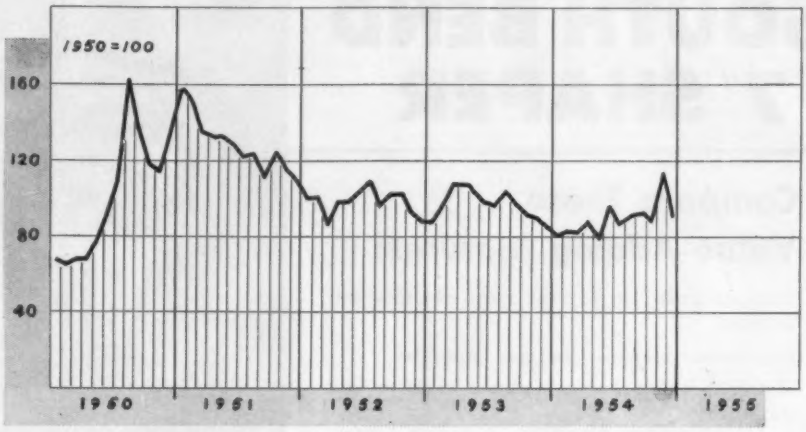
Fellows' new financing setup for machine tools is based on the CIT Financial Corp plan of dovetailing depreciation and rates of payment, which according to Mr Miller, "seems to make the leasing of machine tools obsolete." He added that Fellows "will no longer offer its machines for lease except in very unusual cases."

Terms of up to three years under the Fellows-CIT plan will call for equal monthly payments at 6% simple interest. This applies to plastic molding machines, which will be sold on this plan only, and to machine tools.

Longer terms for machine tools, however, will be geared to match the sum-of-the-digits method of depreciation. The finance charge will be 4.25% multiplied by the number of years of the term of the contract and applied to the original unpaid balance of the cost of the equipment. The sum of the first year's monthly instalments on a machine financed under the new plan would be approximately the same as the depreciation under the sum-of-the-digits method. Thereafter, the owner can write off each year's payment to depreciation expense.

25% Down Payments

Mr Miller added that down payments on the Fellows-CIT Pay-As-You-Depreciate Plan will be flexible but generally will be about 25% of the purchase price.



Index of New Orders for Machinery Shows Year-End Drop

MACHINERY NEW ORDERS DROPPED BACK TO EARLY FALL LEVELS, after registering an upturn in November. As shown here on the McGraw-Hill Index of New Orders for Machinery (except electrical), after seasonal adjustment December orders stood at 90 on the Index (1950 = 100). This compares with a November figure of 114, highest for the year. December's figure was the same as that for October and was just about average for the year (1954 low: May's 79).

Lincoln Foundation Establishes $12,000 Machine Tool Design Award

CLEVELAND — $12,000 will be awarded for the 15 best technical papers on use of arc welding in machine tool design by the James F Lincoln Arc Welding Foundation. Top award will be $3000, with other main awards of $2500, $2000, $1500 and $1000, plus 10 awards of $200 each.

Subject: Arc Welding

Papers must describe the use of arc welding in the design of either a component or a complete machine tool (either a metal cutting or a metal forming tool as defined by the National Machine Tool Builders Association). The work or equipment described must have been planned or executed in the period January 1, 1953, to July 15, 1955. The design may be already manufactured at the time of writing, or planned to be manufactured. It may be either a redesign or new design. Award program closes July 15, 1955.

The program is open to anyone in the United States or its possessions actually engaged in the design or manufacture of the equipment described. Either a single author or a group of authors may submit a paper.

Foundation Chairman Dr E E Dreese, Head, Department of Electrical Engineering, Ohio State University, said that the program is being sponsored this year as a design stimulus for machine tool builders "who are examining their designs for improvements and developments to announce at the Machine Tool Show in September."

SIMMONS TO LEASE REBUILT ELEPHANT TOOLS

ALBANY, NY — Companies with ratings of "AAA" or better can now arrange for 10-year leasing of expensive, massive (so-called "elephant") machine tools, rebuilt and guaranteed by Simmons Machine Tool Corp.

Under a plan worked out by Simmons and CIT Financial Corp, Simmons will purchase a machine from an accredited metalworking firm, rebuild and modernize it, then lease the machine back to the company on a monthly rental basis. Or you can order Simmons to buy an old machine from some other firm, rebuild and modernize it to your specifications, and rent it on a monthly basis. Plan is based on 10-year tax depreciation.

BURKE BENCH MILLERS
. . . for most efficient machining of small parts!

Here's the horizontal miller that combines unmatched accuracy and low cost! Two power feed tool room models and two hand feed production models permit rapid handling of a wide variety of small parts and freeing big millers for larger jobs. Numerous attachments and accessories provide even greater versatility and speed. Detailed literature on request.

OUTSTANDING ACCURACY AT LOWEST COST

Find out how fast, accurate and economical small milling *can be!* U. S. Burke milling machines provide outstanding quality, dependability and convenience in operation . . . for hundreds of dollars less than leading competitors. Investigate U. S. Burke time and money-saving performance now! Write The U. S. Burke Machine Tool Division, 6 Brotherton Road, Cincinnati 27, Ohio

U.S. No. 1 HAND MILLING MACHINE
. . . half the cost, twice the value!

A top-quality precision production tool . . . priced so low it's actually profitable to spot it around "looking for work" that can be kept out of the milling section. Accurate, rigid, simple and adaptable. Easily equipped with air-hydraulic feeds for high production.
Detailed literature on request.

THE U·S·Burke MACHINE TOOL DIVISION

Carborundum Co, Niagara Falls, NY, has acquired **Curtis Machine Corp** of Jamestown, NY, from **Lincoln Park Industries Inc** by exchanging 8696 shares of Carborundum stock for the entire capital stock of Curtis. Curtis, pioneer maker of abrasive belt grinding machines, will have its output integrated with Carborundum's abrasive belt production.

General Motors Corp starting next September will award $2 million worth of four-year scholarships, ranging up to $2000 a year, and grants to 306 US colleges and universities averaging $500-$800 per year per student.

Emsco Mfg Co, Los Angeles, acquired "most of the assets" of **Johnston Pump Co,** Pasadena, Calif. Emsco, makers of oil field machinery, that were formerly 85% owned by **Youngstown Sheet & Tube.**

Blake-Waindle Corp, West Newton, Mass, has been formed by Edward Blake of the **Edward Blake Co,** West Newton, and Roger F Waindle of **WaiMet Engineering Co,** formerly of Muskegon, Mich, to consolidate their two firms. The Blake Co makes precision grinding machines, and is a sales agent and distributor for related lines. WaiMet is a metallurgical process and product consulting firm.

Reynolds Metals Co will build an aluminum products fabricating plant somewhere in the Pacific Northwest this year.

Chance Vought Aircraft, Dallas, Texas, has been awarded a $16-million contract to produce Regulus guided missiles for the Navy.

Detrex Corp, Detroit manufacturers of metal cleaning machinery and equipment, has formed the **Detrex Finance Co** to finance sale of its equipment through 35 distributors.

Marquardt Aircraft Co, Van Nuys, Calif, plans a two-for-one split of its common stock.

American Brass Co plans to build a $25-million mill at Terre Haute, Ind, for production of aluminum ingots and billets, sheet and strip, and extruded shapes at an annual output of 60,000 ingot tons.

Companies in the News . . .

Dana Corp, maker of automotive equipment, has something unique in diversification. It will put its entire Pottstown, Pa, plant on a contract machining basis — offering use of automated machine tools, broaching facilities, a tube mill, and stamping, forging, screw machine products, heat treating and inspection facilities, plus the services of its tool engineering department, to Eastern Seaboard manufacturers.

E W Bliss Co, Canton, Ohio, has opened a new can machinery plant at Hastings, Mich.

Hamilton Watch Co, Lancaster, Pa, recently acquired the **Hathaway Instrument Co,** Denver, producers of electronic gages and instruments, will develop unusual miniature electronic and electro-mechanical systems for industry.

Carborundum Co of Niagara Falls, NY, has established an **Electro Minerals Division** there to make and sell silicon carbide and fused alumina crudes. The company's **Bonded Products and Grain Division,** which formerly sold silicon carbides and fused alumina, has been renamed the **Bonded Abrasive Division** and will concentrate on manufacture and sale of grinding wheels and bonded abrasives.

Cleveland Crane & Engineering Co is building office, warehouse and materials handling manufacturing facilities at 6435 Corvette St, Los Angeles.

Borg-Warner Corp's Long Mfg Division, Detroit, plans to build and market a line of torque converters for industrial applications.

Otis Elevator Co recently told employees that if costs of manufacturing at its Yonkers, NY, and Harrison, NJ, plants can't be cut, and cut immediately, Otis will have to move to a new plant in the Midwest. The implication, dollar volume output per worker is far too low and local taxes far too high as things stand.

Clyde Tube Forgings of America, capitalized at $1 million by **Zidell Machinery & Supply Co** of Portland, Ore, and **Clyde Tube Forgings Ltd** of Glasgow, Scotland, will build a plant in Portland to make welding fittings. Equipment and machinery will come from Glasgow.

Gardner-Denver Co, Quincy, Ill, has acquired **Keller Tool Co** of Grand Haven, Mich, and will operate it as a division.

Delta Welder Corp, newly formed in Detroit by Harry E Day, former vice president and general manager of Multi-Hydromatic Welding and Mfg Co, Detroit, will engineer, design and make automatic multiple-point, high-production, and standard welding machines.

Eclipse Fuel Engineering Co, Rockford, Ill, has purchased the **Mettler Co,** Los Angeles makers of industrial burners and controls.

Reliance Electric & Engineering Co will acquire **Reeves Pulley Co,** Columbus, Ind, subject to shareholder approval. Reeves makes variable speed transmissions and drives. The Reliance-Reeves combine will offer transmissions and drives, plus combinations of the two, to a variety of industries. Reeves will operate as a division of Reliance.

Furane Plastics of Los Angeles has taken over some of the resin-manufacturing activities of **Wal-Mar Plastics Inc** as a means of expanding its production of epoxy tooling resins.

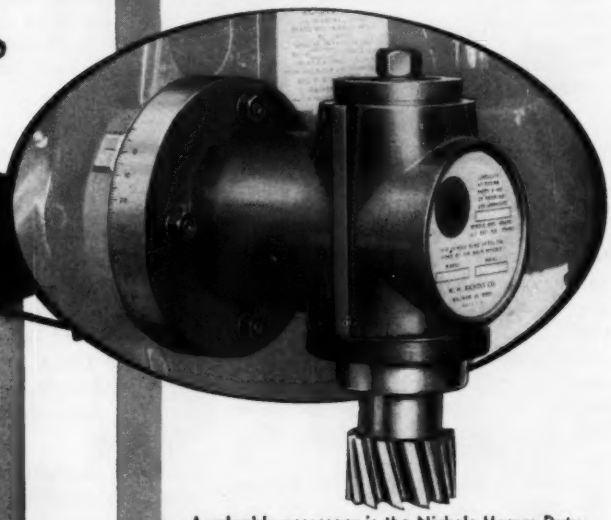
Servel Inc, Evansville, Ind, makers of refrigerators and air conditioners, will spend $9 million in plant modernization.

Federal Machine & Tool Co Inc of Long Island City, NY, has acquired **Atlantic Carbide Co** and **Colonial Tool & Cutter Co,** both of Rochelle Park, NJ. The combine will be renamed **Federal Carbide & Cutter Co Inc,** and will operate in conjunction with a subsidiary, **Federal Services Co,** to offer a complete cutter grinding service, plus conversion of standard tools into special tools, and will make single-point and form tools.

Barnes Drill Co, Rockford, Ill, has opened an office at 3419 S Telegraph Rd, Dearborn, for sales and service of its honing machines, tools, transfer machines, drilling machines, cleaning equipment and abrasives in the Detroit-eastern Michigan area.

THE *Nichols* TOOL ROOM MILLER

"the miller that uses its head!"



A valuable accessory is the Nichols Heavy-Duty Vertical Milling Attachment. Takes full 1½ H. P. up to 2000 R. P. M. (So precise, some shops use it for jig boring!)

The unusual versatility and extra capacity of this model make it extremely useful for the tool room. Because it is equipped with the "rise-and-fall" spindle, it can perform not only conventional precision milling, but also facing boring, key seating, contour milling and other operations. Both longitudinal and transverse feed screws are fitted with hand wheels and extra-large adjustable micrometer dials with easy-to-read graduations. This model is especially useful because of its compactness, generous capacity and ability to handle a wide variety of work to close tolerances —*to "tenths" when desired!*

CONDENSED SPECIFICATIONS

Table Working Surface	8½" x 30"
Longitudinal Travel	19"
Transverse Travel	7"
Vertical Travel—Knee	13½"
Rise and Fall of Spindle	4½"
Selective Speed Ranges up to 5000 R. P. M.	
Weight	1250 lbs.

Write today for Nichols general catalog which describes the six models of Nichols Millers. A sound, color movie, "the Miller that Uses its Head" is available for free showing. May we reserve it for you?

MANUFACTURED BY W. H. NICHOLS COMPANY • WALTHAM, MASSACHUSETTS

NATIONAL DISTRIBUTORS **NICHOLS-MORRIS CORPORATION**

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WHITE PLAINS, N. Y.

Wallace E Anderson has been named general sales manager of the Brown & Sharpe Mfg Co. He has recently been division superintendent of the Precision Tool & Gage Division and at one time served his apprenticeship with the company

Leo W Reuland has been named division manager of the Machine & Small Tools Divisions, and the Hendey Machine Division of Barber-Colman Co, Rockford, Ill. He formerly was production manager and sales manager

Robert A Horner, heretofore manager of the Machine & Small Tools Division of Barber-Colman, will continue at least throughout 1955 in an advisory capacity to Mr Reuland, his successor

Names in the News . . .

Niles-Bement-Pond has announced three promotions in its Pratt & Whitney Division: **A S Burgoyne,** chief gage sales engineer for electrolimit continuous gages, has been named manager of domestic gage sales; **A F Miller, Jr,** chief cutting tool sales engineer, has been appointed manager of domestic cutting tool and precision parts sales; **J B Wilkie,** chief gage sales engineer for air and electric gages, has been made assistant manager, Cutting Tool and Gage Divisions.

Paul R Hatch has resigned as vice president, sales, of the Brown & Sharpe Mfg Co.

Carl F Dietz, president of Lamson Corp of Delaware, has become chairman of the board. **Francis D Weeks,** vice president and treasurer, succeeds Mr Dietz as president of the parent company, and as board chairman of Lamson Mobilift Corp, a subsidiary.

John D Russell, manager of engineering, Joy Manufacturing Co, has been appointed vice president, engineering.

J D Warfield, assistant to the vice president, apparatus products, Westinghouse Electric Corp, has been appointed assistant manager of the Gearing Division.

Albert B Hunt, vice president and treasurer of Rivett Lathe & Grinder Inc, has been elected president. He succeeds **Thorvald S Ross,** who was president and general manager from 1921 through 1954 and who becomes chairman of the board. **Thomas B Williams,** heretofore treasurer of Rivett, has been apointed vice president.

Ex-Cello-Corporation has announced two promotions: **E Hugh Jones,** head of jet blade and rotor production, to operations manager of the Lima and Fostoria, Ohio, plants; **Richard A Lodge,** associated for the past several years with the firm's aircraft operations, to assistant sales manager in charge of sales at the two plants.

George E Merryweather has become chairman of the board and secretary of the Motch & Merryweather Machinery Co, Cleveland. He recently has served as vice president and secretary

Charles B Lansing is the new president of Motch & Merryweather. He is a consulting engineer and former president of National Tile Co and Ilco Ordnance Co, and is chairman of the board of Western Reserve University

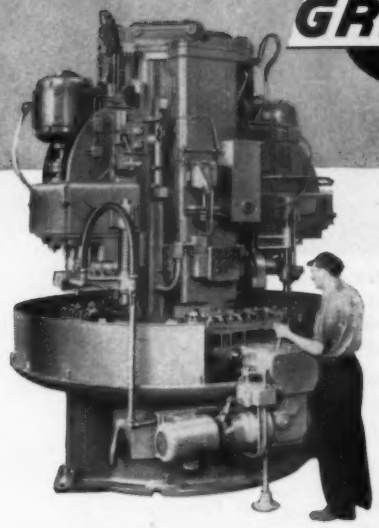
Clare R Kubik becomes executive vice president and treasurer of Motch & Merryweather. He formerly was vice president, administration

PRODUCTION MACHINERY

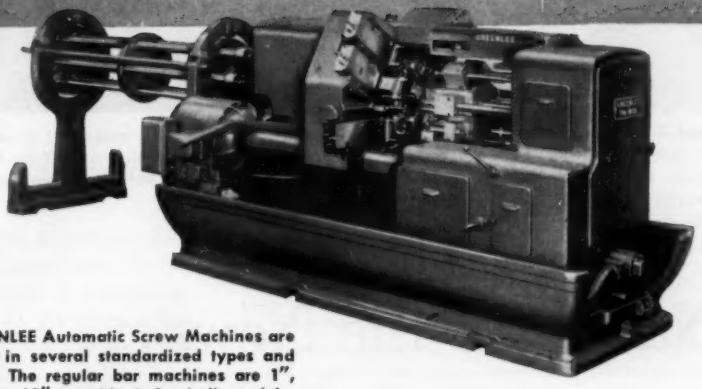
GREENLEE AUTOMATICS

PRODUCTION MACHINERY

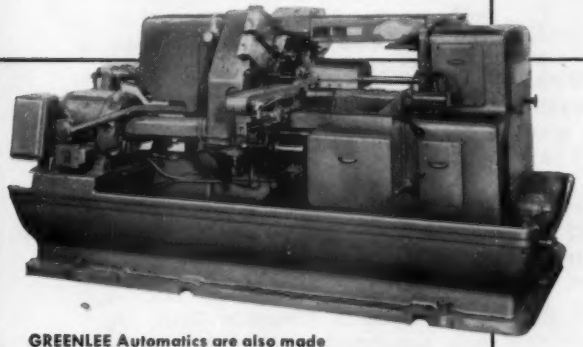
GREENLEE SPECIAL MACHINES



This is an example of a Vertical-type Special-purpose Four-station Automatic Indexing Machine designed and built to perform a number of important operations on connecting rods for an automobile engine.

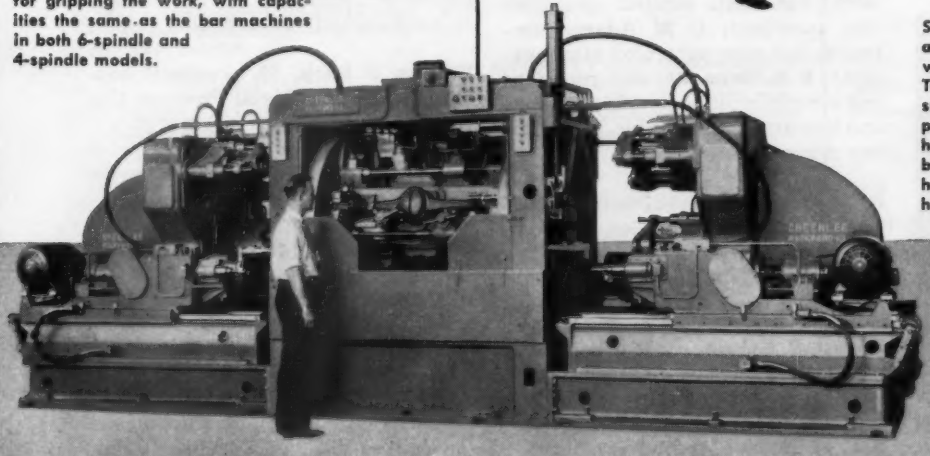


GREENLEE Automatic Screw Machines are made in several standardized types and sizes. The regular bar machines are 1", 1⅛", and 2" capacities in 6-spindle models, and 1⅛" and 2⅛" in the 4-spindle models. GREENLEE Automatics have a number of distinctive features which help to lower costs on both long-run and short-run jobs.



GREENLEE Automatics are also made for second operation work, an example of which is shown here. Collets are used on these machines for gripping the work, with capacities the same as the bar machines in both 6-spindle and 4-spindle models.

Since 1935 GREENLEE has pioneered in the design and manufacture of Automatic Transfer Machines widely used in the big mass-production factories. The example shown here is a comparatively small and compact six-station machine which performs a group of operations on the ends and head faces of a V-8 cylinder block. Some of the bigger GREENLEE Transfer Machines will do several hundred operations in a cycle time of less than half a minute.



At the left is another GREENLEE Special Machine, in this case a Horizontal, Two-way, Four-station, Drilling, Boring, and Tapping Machine for finishing a series of holes in the ends of rear-axle housings. GREENLEE experience is available for the design and manufacture of a wide range of such cost-reducing machines.

GREENLEE BROS. & CO. 1721 Mason Ave., Rockford, Illinois

MULTIPLE-SPINDLE DRILLING, BORING, TAPPING MACHINES • AUTOMATIC SCREW MACHINES • AUTOMATIC TRANSFER MACHINES

Carl J Oxford, formerly chief engineer of National Twist Drill & Tool Co, has been appointed vice president in charge of engineering, as reported in *AM* Jan 3, p146

David A Wallace, assistant sales manager, Cincinnati Lathe & Tool Co, has been promoted to sales manager

J F McRoberts, assistant to the president of Progressive Welder Sales Co, has been named vice president and general manager

Names in the News . . .

Executive changes at Baldwin-Lima-Hamilton: **McClure Kelley,** president of Austin-Western Co, a B-L-H subsidiary, and general manager of B-L-H Construction Machinery Division, has been made executive vice president of the parent company; **Oliver De G Vanderbilt, 3rd,** former president of Taylor-Wharton Iron & Steel Co, has been elected a director and vice president in charge of all commercial activities; **Marvin W Smith,** B-L-H president, has also been made chairman of the executive committee; **Ralph K Stiles,** executive vice president of Austin-Western, has been named president: **Henry F Barnhart,** vice president of the Lima Division, and assistant general manager of the Construction Machinery Division, has been appointed general manager of the latter division; **Henry F Lockhart,** manager of the Rochelle plant of Austin-Western has been promoted to director of sales for the division.

E Franklin Motch, late president of of Motch & Merryweather Machinery Co, who died Jan 6 (*AM* Jan 17, p151)

Otto W Franke, for six years operating manager of Chrysler Corp's Dodge Division, has been named staff assistant to C J Snyder, Chrysler vice president and operating manager.

Edmond A Neal, Jr, Nicholson File Co, Providence, RI, has been appointed technical lecturer to industry and schools on the selection, use, and care of hand steel files and rasps.

Bohn Aluminum & Brass Corp changes: **T W Kuhn,** vice president, sales, has been elected executive vice president; **C M Adams,** secretary, has been appointed vice president; **E K Mann, Jr,** vice president and controller, is now vice president and treasurer; **F M Taylor,** treasurer, has retired.

R C Ochs, associated with Eaton Manufacturing Co in sales, research, and purchasing, has been named assistant general manager of the Axle Division.

Robert P Gehring, formerly associated with Westinghouse Electric Corp in welding sales and engineering, has been appointed sales manager of Cayuga Machine & Fabricating Co, Depew, NY.

Cleveland Crane & Engineering Co, Wickliffe, Ohio, has advanced **Harry Cotesworth** to chief engineer of the Development Department, and **Kurt R Weise** to chief engineer of the Cleveland Tramrail Division.

Irving G Meyer, Homecraft products manager for Rockwell Manufacturing Co's Delta Power Tool Division, has been promoted to assistant to the vice president in charge of the division.

OBITUARIES

Knud Engelsted, chairman of the board and president of O S Walker Co, Worcester, Mass, died Dec 14 at his home in Riverside, Conn. He was associated with many metalworking plants through the years, including Union Twist Drill Co. A native of Denmark, he was buried in his home city of Svendborg.

William J Karp, 60, president and founder of Karp Metal Products Co, Brooklyn, NY, died Jan 17.

William B Hackett, 65, of the Lewis Machinery Division, Blaw-Knox Co, died Dec 24 in Florida. Formerly vice president in charge of engineering, Mr Hackett at the time of his death was consultant to the vice president and works manager of engineering and sales.

Wiley W Stephens, 87, co-founder of Stephens - Adamson Manufacturing Co, Aurora, Ill, died Dec 30 in Pasadena, Calif.

FYI

FOR YOUR INFORMATION

FREE Catalogs, Booklets, Charts, Calculators

FYI – these initials symbolize information that's important. And there is much of importance in the literature listed here. To get the ones you need, all you do is fill out one coupon for each booklet you wish to order. Indicate in the circle on the coupon the number of one catalog wanted. When you have filled out a card, detach, stamp, and mail. We'll do the rest.

MACHINES AND ATTACHMENTS

1 BROACHING MACHINES—*Colonial Broach Co, Detroit 18, Mich.* 4-page bulletin RT-54 illustrates dual-ram units. Specification data on 11 models; design details and features described.

2 BLANKING PRESSES—*Waterbury Farrel Foundry & Machine Co, Waterbury, Conn.* 8-page circular No. 915—N-2 pictures and describes units with 300 to 900-rpm range; illustrates design features of two sizes, No. 0 and No. 1 for mass production.

3 GEAR HOBBER—*Michigan Tool Co, Detroit 12, Mich.* 8-page bulletin LH-54 covers Model 1445 Ultra-Speed unit. Includes machine design data, specifications, operating functions, production case histories.

4 GRINDING AND POLISHING TECHNIQUES—*Behr-Manning Corp, Troy, NY.* 60-page "Production Digest" is a compilation of 20 technical papers on methods using coated abrasives. Illustrated handbook contains suggestions on cost cutting in production practice.

5 MILLING MACHINES—*Cincinnati Milling Machine Co, Cincinnati 9, Ohio.* 27-page illustrated publication M-1871 contains engineering data and specifications of HyPowermatic line of heavy-duty bed millers rated at up to 50 hp, spindle speeds to 2000 rpm.

6 HYDRAULIC MULTIPRESS—*Denison Engineering Co, Columbus 16, Ohio.* 24-page catalog 120-C illustrates and describes various operations possible on versatile unit. Section on accessories included.

7 BRINELL HARDNESS TESTER—*Steel City Testing Machines, Detroit 38, Mich.* Form KE 1154 illustrates features of "Color-Glance" machine for high speed production testing. Three colored lights indicate relative hardness of parts being tested.

8 WIRE STRAIGHTENING & CUTTING MACHINES—*Lewis Machine Co, Cleveland 27, Ohio.* Bulletin No. 55-1 describes 16 models for wire from 0.012 in. to ¾ in. Smallest and largest units illustrated.

9 INDEX TABLES—*Ferguson Machine & Tool Co, St Louis 21, Mo.* 12-page catalog 300 describes the Intermittor line for high-speed production. Contains assembly drawings, tables of load ratings and dimensions of 150 models available with from 4 to 36 work stations.

10 HYDRAULIC PRESS — *Hydraulic Press Mfg Co, Mount Gilead, Ohio.* 6-page bulletin 5408 covers Model 150-ton CU-3 for drawing, trimming, coining, flanging, sizing, and tapering. Both blankholder and die cushion can be used in combination or singly.

11 MACHINE TOOLS—*Sheldon Machine Co, Chicago 41, Ill.* 24-page catalogue illustrates and describes 18 different tools. Includes complete information and specifications on new Sheldon lathes.

TOOLS AND ACCESSORIES

12 END MILLS—*Wendt-Sonis Co, Hannibal, Mo.* 4-page illustrated folder describes complete line of helical carbide tipped end and shell mills. Includes prices, specifications, design, and applications.

13 AIR GAGES—*Taft-Peirce Manufacturing Co, Woonsocket, RI.* 4-page illustrated folder "Automatic Gaging and Size Control" presents examples of high-speed gaging with air. Provides information on Air-Electric CompAIRators.

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American Machinist
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New York 36, N. Y.

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American Machinist
330 W. 42nd St.
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Place 3¢ Stamp Here

FYI
FOR YOUR INFORMATION

14 MILLING CUTTER ARBORS—*Lovejoy Tool Co, Springfield, Vt.* 8-page folder illustrates and contains specifications on complete line.

15 MECHANICAL COUNTER—*Raycon Corp, Redwood City, Calif.* Form 550-1054 gives details on Model 550 Rayconter with speeds up to 3000 per minute; total counts, 999,999.

16 CARBIDE TIPPED REAMERS—*Schmarje Tool & Engineering Co, Muscatine, Iowa.* Tabular data on straight and taper shank models. New, lower prices listed.

17 INDEXING SPECTROMETER — *North American Philips Co, Mount Vernon, NY.* 4-page illustrated folder "Noreleo Autrometer" describes the principle and operation of multi-element instrument for process and quality control. Automatically analyzes incoming raw materials, constituents in various stages of combinations, and finished products.

• DECIMAL EQUIVALENT WALL CHART — *Chicago-Latrobe, 411 W Ontario St, Chicago 10,* Ill. 18 x 24 in., shows equivalents and tap drill sizes for wire gage, letter size, and fractional size drills. Request direct on company letterhead.

18 COMPRESSION FIXTURE & SETTING GAGE—*Scully-Jones & Co, Chicago 8, Ill.* 4-page bulletin describes unit for recessing tools. Also gives details of company's micrometer grinding fixture for circular form tools used in automatic screw machines and recessing tools. Both are designed to speed setting and sharpening.

19 POWER TOOLS—*Duro Metal Products Co, Chicago 39, Ill.* 16-page catalog describes the Duro Master workshop incorporating a motor-mounting principle by which the single motor operates 5 to 7 power tools; can be changed from tool to tool in seconds.

20 KEYWAY BROACHES & KITS—*The du Mont Corp, Greenfield, Mass.* 15-page illustrated catalog contains specifications and data on 25 different Minute Man kits; 23 standard sizes of broaches; 71 standard size bushings; and new line of HSS square broaches. Special types illustrated and described.

PLANT SERVICE EQUIPMENT

21 METAL FINISHING—*The Carborundum Co, Niagara Falls, NY.* 42-page illustrated booklet "Abrasive Grain and Powders" contains abrasive engineering recommendations. Sections on metal buffing, metal tumbling, and pressure blasting.

22 VENTILATION—*Dravo Corp, Pittsburgh 22, Pa.* Brochure of engineering case studies describes 8 metalworking applications where warm air space heaters were used to temper large volumes of fresh make-up air.

23 BARREL FINISHING — *Minnesota Mining & Manufacturing Co, St Paul 6, Minn.* Two booklets describe techniques and products. "Barrel Finishing" explains how it works, what parts can be so treated, what operations it performs. Lists complete line of Honite chips, compounds and equipment. "Abrasive Chips and Compounds for Barrel Finishing" describes differences between chips; gives specifications for Honite compounds available for cutting, finishing, and cleansing operations.

24 WIRE ROPE ASSEMBLIES—*Macwhyte Co, Kenosha, Wis.* 221-page catalog 5201 contains illustrated data on complete, flexible units used as a part of machinery and equipment or for slings and hoists.

• DRAFTING ROOM FURNITURE & EQUIPMENT—*Mayline Co, 619 N Commerce, Sheboygan, Wis.* 21-page catalog 8-A illustrates company's line, including tables, files, T-squares, etc. Request direct on company letterhead.

PARTS AND MATERIALS

25 D-C MOTORS—*Barber-Colman Co, Aircraft Controls Div, Rockford, Ill.* Catalog F4344-1 describes permanent magnet motors with outputs up to 1/10 hp; data sheets on typical motors from 6 v to 115 v to power electro-mechanical actuators, transfer switches, programming devices.

26 FIRE-RESISTANT HYDRAULIC FLUID—*Monsanto Chemical Co, Organic Chemicals Div, St Louis 1, Mo.* 20-page booklet includes step-by-step check list for converting a system to Pydraul F-9, as well as detailed information on properties and past performance.

27 INDUSTRIAL SOLENOIDS—*General Electric Co, Schenectady 5, NY.* 16-page bulletin GEA-6215 contains information on product features, lab tests, general application rules. Shows force and current curves, and dimensions for both push and pull types.

28 STAINLESS STEEL VALVES—*Cooper Alloy Foundry Co, Hillside, NJ.* Technical paper in booklet form is compiled of 75 questions and answers designed to help in selection and maintenance of valves. Covers service and installation problems.

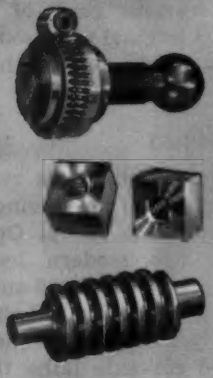
Feed Screws
Jack Screws
Lead Screws
Return Screws
Metering Screws
Power Screws
Elevating Screws

SCREWS

any type... any size... any quantity!

Square threads, acme threads, buttress threads, V-threads, ground threads —one screw, or ten thousand or more— whatever you need, *you can get it at Illinois Gear!*

If you want highest quality and precision, plus on-time delivery (even if we have to work around-the-clock to meet your emergencies), then send your next order to Illinois Gear!



Look for this mark ILG ... the symbol on finer gears

ILLINOIS GEARS Reg U S Pat Off

Gears for Every Purpose ... one gear or 10,000 or more

ILLINOIS GEAR & MACHINE COMPANY

2108 NORTH NATCHEZ AVENUE • CHICAGO 35, ILLINOIS

RAILROADING TODAY:

Tradition is Giving Way to Speed and Specialization

To beat the gap between increased costs of supplies and labor and the lesser increases in passenger and freight rates, domestic railroads have been forced to adopt scientific and up-to-date methods in all phases of their operations. Here, the Association of American Railroads gives you some pointed examples.

WASHINGTON — An old railroad tradition—the familiar section crew of one foreman, perhaps four workers, a hand car and a batch of hand tools—is just one aspect of railroading that's going by the boards as the railroads modernize their methods. Now, a maintenance crew of maybe 80 men does the job — equipped with a dozen or more ballast-working machines, cranes, compressors, tie-removers and inserters, and motorized railroad cars. Or maybe you'll see bulldozers, trucks and crawler cranes, drive up from the highway to handle the repairs. That's not uncommon in modern railroading, according to a survey of railroad research and improvement recently published by the Association of American Railroads.

Railroads have picked up the preventive-maintenance idea, too. Several roads have plans whereby they check ties on all lines on a regular routine, replacing those that won't last until the next check. Some main lines are checked every seven years, others six; branches are examined every eight or nine years. This cuts emergency tie replacements sharply.

OIL VS COAL

The big switch to diesel power is well established now; one of the important reasons being the relative efficiency of the engines. Coal can be converted into usable energy with 6% efficiency, while fuel oil can be converted at about 25% efficiency. Even though oil costs more, freight-hauling costs are about half for diesel.

The change to diesel power also has changed repair shops. There are many fewer of them, and those that operate now keep the locomotives a much shorter time. The trend is toward sending broken parts back to the builders and taking rebuilt parts in exchange. Some shops still do their own repairs, in which they are aided by much better interchangeability between parts. Working with diesel engines allows better shop conditions, too; cleaner, neater, and better organized.

The railroad roundhouse is on the way out, too. Diesels run much longer between normal servicing periods, and the conventional hookup, with two engines back-to-back, eliminates turnarounds. Nowadays, an engine pair slated for a checkup can be shifted from freight service to a passenger run that brings it close to the shop, then put on commuter runs until the shop calls for it. After repairs, it can be shuttled between various kinds of service back to its original run—something that was rarely done with steam engines.

SHOP SAVINGS

Modern equipment is responsible for much of the savings railroads have made lately. One shop installed two modern hydraulic presses, paid out $50,000 and made back $10,000 in speed and efficiency the first year. Another shop uses a $41,000 car-axle lathe that returns $6000 per year. An electric repair shop modernized for $60,000 brings in savings of $55,000 a year.

One of the outstanding advances in railroad-maintenance science is the wheel-truing machine, which takes skin cuts on car wheels while they are still on the car. A diesel switch engine, for example, can have its wheels resurfaced in 8 hr instead of 2 days, saving $300. In addition, the machine makes thinner cuts than possible before, leaving more wheel metal—which is valued at 10,000 miles per 1/16 in.

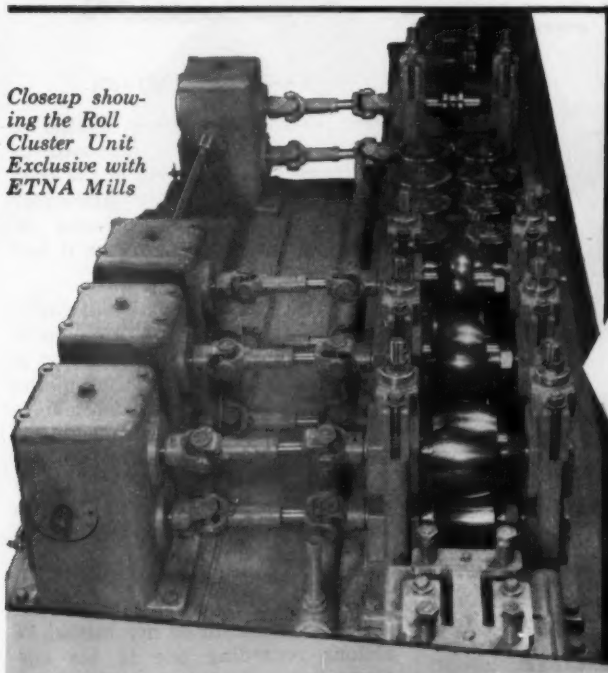
Hard-chrome plating on working parts accounts for considerable saving; an example is on crank pins and valve stems, which now last four to five times longer. Pure iron, electrolytically applied to diesel cylinder liners, prolongs life three to five times. Even ultrasonics are used, to clean car and engine parts, at 430,000 cycles per second.

One railroad, in recapping its changeover to diesel, estimated that the switch has obsoleted an investment of $50 million in equipment usable only for steam operation.

Octopus Vacuum Chuck

DEVELOPED BY CONVAIR, this octopus vacuum chuck, shown in use on a skin milling, has suction cups with removable rubber grommets. Screw in center hole serves as shut-off valve, allowing any shape of skin to be placed on chuck without need for complex seal-off of vacuum source. About 1000 cups are used to hold skin during milling

LEADING THE INDUSTRY IN DESIGN...

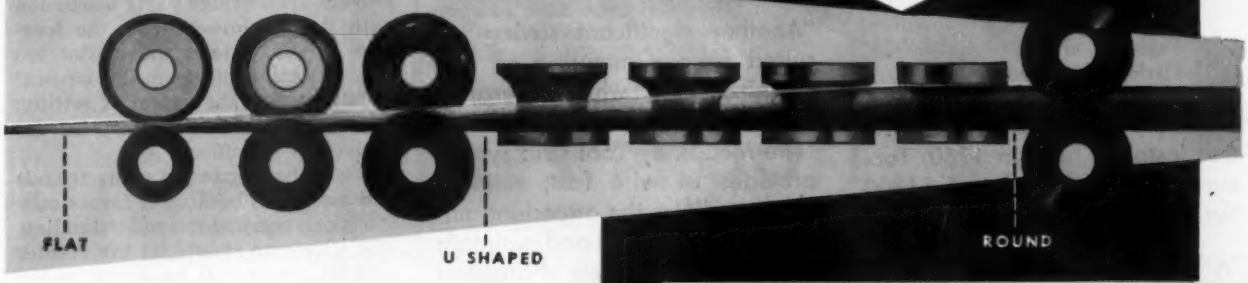


Closeup showing the Roll Cluster Unit Exclusive with ETNA Mills

NO MARKING . . . NO SCRATCHING
NO UPSET EDGES . . .

THE Etna METHOD

FOR SMOOTH, WELL FORMED STEEL TUBING



Exclusive with Etna is the cluster unit. This unit progressively rolls the tube into shape without excessive stretching of the edges, thereby eliminating the "buckling" experienced with ordinary tube mills. Etna machines are not forming mills, they are designed for one purpose only . . . to make clear, well formed carbon and stainless steel tubing with no marking, no scratching, no upset edges. Write for complete details.

The ETNA 4KU Mill

Abbey ETNA Company

3404 MAPLEWOOD AVE., TOLEDO 10, OHIO

McCaskey Tool Crib Control installation in the Elyria, Ohio plant of The Pfaudler Co., prominent manufacturer of glass lined, glassed. steel and stainless steel tanks, pressure vessels and other process equipment.

McCaskey Tool Crib Control produces *QUICK RETURN* on Pfaudler Company investment

Mr. C. S. Rieley, Chief Industrial Engineer of The Pfaudler Co., Elyria, Ohio, states:

"McCaskey Tool Crib Control was installed here in 1950. Tool purchases were reduced $1800 during the first year.

"At the start of operations 3,757 expendable tools such as drills, taps and reamers having a value of $5375 were turned in to the crib. In addition, more permanent types of tools such as chucks, boring bars, sleeves, etc. valued at over $3000 were recovered.

"Another significant saving resulted from elimination of idle machine time while operators searched for tools.

"The McCaskey Tool Crib system provides us with fast, reliable service, allows the attendant ample time to regrind and maintain the tools in properly sharpened condition, keeps tool stocks at a workable minimum and helps reduce breakage through simple control records.

"SAVINGS IN REDUCED TOOL PURCHASES ALONE IN THE FIRST FEW MONTHS PAID FOR THE ENTIRE INSTALLATION."

Mail coupon for further evidence that McCaskey Tool Crib Control quickly returns its first cost in continuing savings in plants both large and small.

Victor Adding Machine Co.
McCASKEY INDUSTRIAL DIVISION
3900 N. Rockwell Street
Chcago 18, Ill.

Please send me all the facts concerning McCaskey Tool Control ☐; Gage Control ☐; Blueprint Control ☐.

Name .....
Position .....
Company .....
Address .....

AM-1-55

McCaskey
INDUSTRIAL CONTROLS
TOOLS - PRODUCTION - COSTS
MAINTENANCE - INVENTORY
Victor Adding Machine Co.,
McCASKEY INDUSTRIAL DIVISION
3900 N. Rockwell Street, Chicago 18, Ill.
Galt, Ontario, Canada

ROUND TABLE Discussion

GOSSIPING WIVES

How much importance should a foreman attach to a supposed or legitimate gripe existing in the shop which he hears about indirectly? Should he approach the man involved in a attempt to clear it up?

A FAMOUS WIT speaking about gossip said: "There is only one thing worse than being talked about, and that is not being talked about." One of the disadvantages of being a foreman is the opportunity it gives some of his subordinates for criticism of his actions. But the foreman cannot have it otherwise; criticism and gossip about his actions are inevitable when many varying personalities are involved.

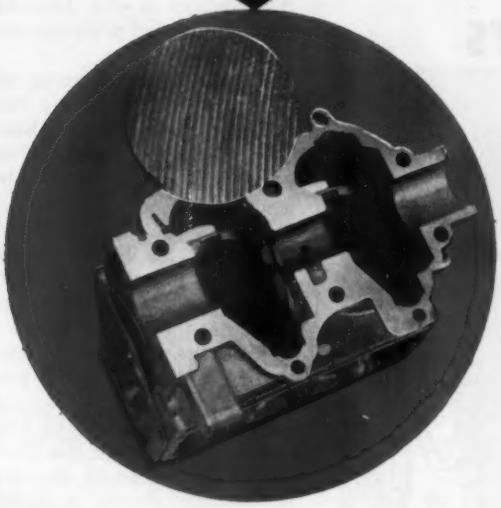
Where a foreman's wife is subjected to criticism of her husband's actions regarding one of his employees via a bridge party discussion with the employee's wife, the foreman shouldn't take the matter too hard. He can profit from this off-beat information to the extent of settling the subordinate's grievance in the privacy of his office.

Gossip has separated many friends and associates because it favors misinterpretation and misunderstanding. The wise man should let the greater part of gossip that he hears be the least part of what he should believe. However, if there is a seed of truth in gossip it should be taken into account in future actions.

Gossip repeated by women usually can be ignored by the husbands. But being married to a foreman carries with it the responsibility of being subjected to criticism for her husband's actions where they adversely affect the fortunes of her friends who are wives of his workers. It's easy to say that women should mind their own business, but any married man can tell you that man has his will, but woman has her way.

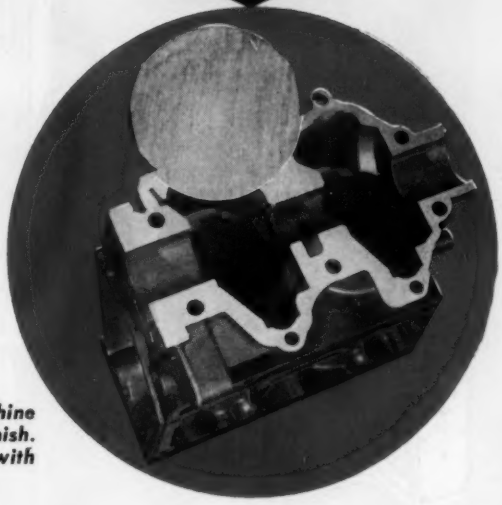
The crux of the whole matter stems from a secret gripe on the part of one of the workers which has back-fired through the channels of a bridge party into the foreman's own home. In order to insure peace of mind for his wife, and peace of mind of the worker, the foreman owes it to his position as leader of his men to effect a solution by talking to the man with the gripe. He should not

you can SEE the difference



standard milling machine produces a 125 micro inch machine finish. Part was milled at 40 ipm, at 1,200 RPM cutter speed.

Four times smoother finish when part is milled with Onsrud high speed, high feed milling machine . . .



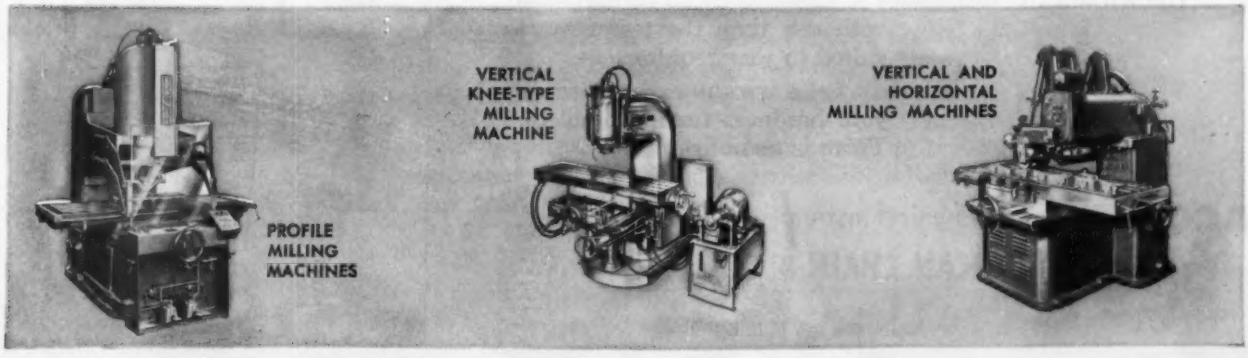
Onsrud A-245 Milling Machine produces a 32 micro inch finish. Part was milled at 70 ipm with cutter speed of 7,500 RPM.

HERE'S PROOF!

. . . that high spindle speeds are needed for effective milling of non-ferrous metals. Here is a graphic demonstration of one of the important advantages of Onsrud high speed milling machines . . . the advantage of smoother, finer finish at high production speeds. The part machined was an aluminum alloy outboard motor cylinder block. Since Onsrud milling machines are specially built for non-ferrous milling, you will find them consistently faster and more accurate for every type of milling job. Your inquiry for complete information is invited. We will be happy to supply a production analysis without charge.

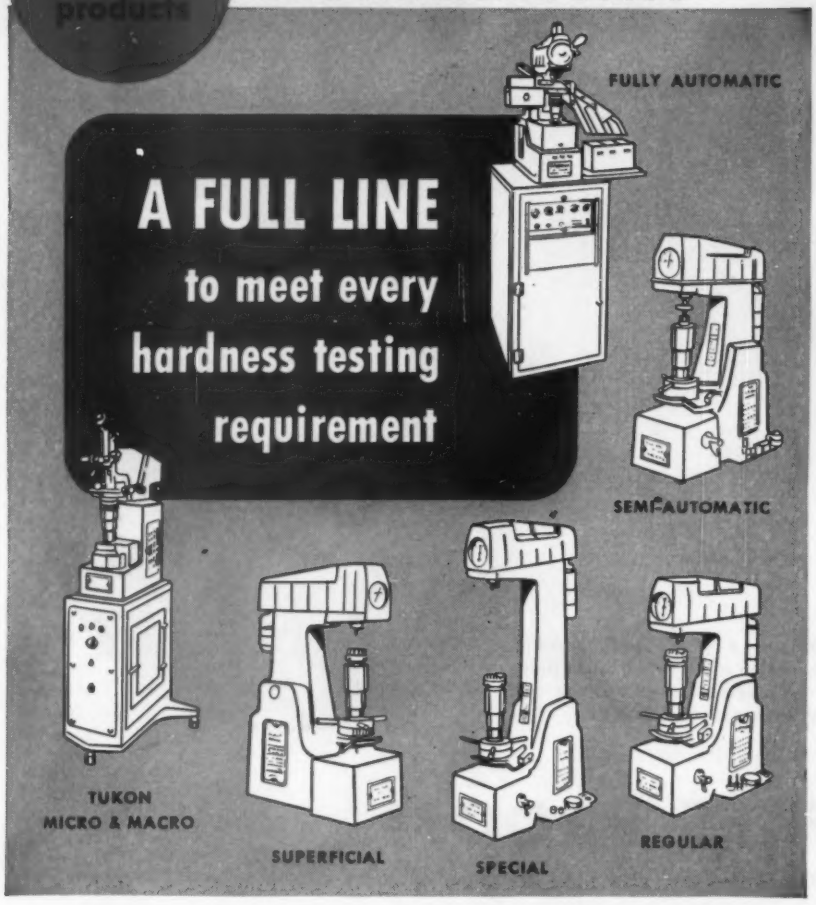
ONSRUD MACHINE WORKS, INC.

3921 Palmer Street • Chicago 47, Illinois



ACCO products

Wilson "Rockwell"* Hardness Testers



• Hardness testing standards of the metal industry have been set and maintained by WILSON "Rockwell" Hardness Testers since 1921. In steel mills, non-ferrous mills and metal fabricating plants everywhere, WILSON "Rockwell" standards have been the mark of perfection for a generation.

What is your testing problem? Whether your material is hardened steel, sheet metal, small parts, tools, rounds, tubes, soft metals or plastic materials—all are tested quickly and accurately by one of the many WILSON models.

WILSON "Rockwell" precision has made them the standard by which all other hardness testers are compared. The WILSON full line makes it unnecessary to compromise with less than the tester most suited to *your* requirement.

Let a WILSON expert discuss your hardness testing problem. There is no obligation.

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Wilson Mechanical Instrument Division

AMERICAN CHAIN & CABLE

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plus BRALES and TUKON

wait until the man comes to him. Nothing is less conducive to good relations and cooperation in the shop than delays in the disposal of the real and fancied problems and gripes of workers.

I know of one foreman who practices what he calls the "cathartic" interview. When a man has a gripe, the foreman arranges a private interview in his office where he is encouraged to blow off steam. He can, in confidence, criticize whatever and whomever he wishes. At the same time, he may achieve the satisfaction of expressing his critical opinion to the person whom he holds responsible for the source of his dissatisfaction. A good deal of the pressure of negative motivation arising from nurtured gripes may be relieved in such a session with the foreman. Of course, the foreman should be fair-minded and tactful in handling the man and put him in the proper frame of mind so that his criticism may come freely without fear of punishment.

Employees, given time and an attentive listener, may not only express their pent-up criticism but may also learn much that they have ignored. For example, brief explanations on the part of the foreman on pertinent management-personnel policies may remove much of the cause of resentment. The theory of the cathartic interview is that employees will be encouraged to express their complaints and will be sure that any injustice they may suffer will be corrected.

The situation arising from gossiping wives would not have arisen had the foreman made frequent rounds of his work area and shown the workers that he was always available for questions, suggestions, and complaints. A good foreman should be sufficiently aware of the happen-

"No, No! . . . Always put the salad forks on the left!"

"Broaching 4140 Steel was giving them a tough time..."

A Michigan manufacturing company broaching 4140 Steel in a horizontal machine found their broach life unusually *low*. The machine shop superintendent tried a number of oils recommended by various companies, but found none satisfactory either for increasing tool life or producing the desired finish. On a routine call, Sinclair Industrial Representative M. L. Howland was asked for his recommendations.

Overheating was the villain...

Mr. Howland reports, "Overheating was the reason these tools were taking a beating. Examination showed the need for an oil with proper anti-weld, extreme pressure characteristics and correct viscosity. From previous experience, I recommended Sinclair ORDNANCE B, a heavy duty cutting oil."

Broach life doubled...

Mr. Howland continues, "Following my recommendations, the superintendent tried Sinclair ORDNANCE B on a test basis. On a follow-up, I learned that the broach life had been *doubled* and the finished pieces were free from tool marks. The company now specifies Sinclair ORDNANCE B *100% for its broaching operations.*"

Why not let a Sinclair Lubrication Engineer help solve *your* lubrication problem. *There's no obligation.* Contact your local Sinclair office or write Sinclair Refining Company, 600 Fifth Avenue, New York 20, N.Y.

SINCLAIR LUBRICANTS

For better screw threads at lower costs per thousand pieces

on automatic screw machines,
turret lathes and other machines

CONSIDER THIS:

THE H & G Insert Chaser Automatic Die Head differs in design and construction from all other die heads. It is unique, without a counterpart, in a class by itself.

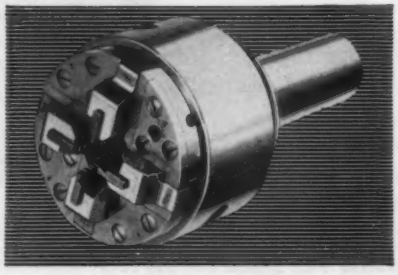
It employs small, low cost chasers as opposed to conventional and so-called long-life chasers. The latter, in the hands of a good mechanic, expert in grinding, give good results. But, cutting threads in this way can be compared to shaving with an old-fashioned, long-bladed, straight-edge razor; a good tool in the hands of a barber – *but not the average man.*

H & G Insert Chasers can be compared to low cost but highly efficient blades used in modern safety razors. They are so cheap that they can be thrown away when dull, or for utmost economy, can be sharpened again and again. With our new grinding fixture, anybody can do a beautiful job. Only a flash grind is required. Girl operators replace a dull set in two or three minutes without sending for a set-up man.

If threading to Class 3 specifications is troublesome, you would do well to change to H & G Insert Chaser Automatic Die Heads. They cut downtime to the minimum, keep machines humming and produce smooth, accurate threads.

Write about the possibility of a 30 day trial* giving the *make, size* and *model* of machine and the *thread size* and kind of *stock*. See what H & G Die Heads will do for you under your conditions.

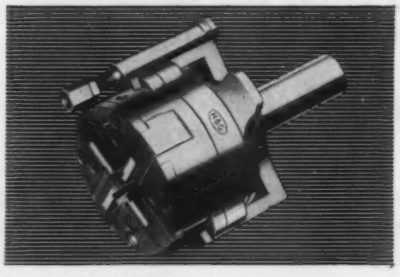
Ask for our bulletin entitled "SELECTING THE PROPER DIE HEAD FOR THE JOB".



ABOVE – *Style MM for multiple spindle automatics, chucking machines, drill presses.*

NOT SHOWN – *Style DMS for turret lathes.*

BELOW – *Style DM for B & S automatics and small spindle machines.*



*Standard size Die Head and subject to acceptable credit rating.

THE EASTERN MACHINE SCREW CORPORATION 20-40 Barclay Street New Haven

ings in his department and the causes of misunderstandings and complaints that need correction. The honestly-disturbed worker, whose complaint has a background of fact, should be sincerely consulted and his gripe carefully weighed. His complaint may arise from conditions which he either sees clearly to be wrong, or which he does not understand.

The foreman's problem of what to do in the situation to relieve his wife in her embarrassing spot is not hard to solve. About the only thing to do is to tell her to continue with her enjoyable bridge club and forget about the incident of the complaining wife of the griping worker. That's the foreman's pigeon, and if circumstances warrant, a matter for him to decide in solving the gripe. As for the secret complaint of the worker involved, the foreman can candidly tell him how the information came to his attention, and ask the man what is troubling him, and what he suggests should be done to remove the source of trouble. This method would smooth over the affair of the bridge club, permit the foreman's wife to continue to enjoy the amicable company of the workers' wives, enhance the foreman's stature in the eyes of his wife, and probably correct an adverse shop condition that the foreman may not have been aware existed.

Gossiping wives cannot be told to mind their own business. That only aggravates the situation and leads to more gossip. That's just another instance where women differ from men. It's difficult for a mere man to fathom the devious thought processes of a woman's mind that encourage gossip. That's why I believe it's not true that woman was made from man's rib; she was really made from his funny bone.

Harry Kaufman
Philadelphia, Pa

"So, Hawkins . . . you're going to spoil a record of twenty years . . . asking for a lousy raise . . ."

"J&L 1200"

COLD FINISHED CARBON STEEL

Use "J&L 1200" steel on your tough jobs for

tops in quality

tops in machinability

tops in uniformity

tops in finish

available in all standard shapes and sizes

It's tops

"J&L 1200" Steel provides the qualities that help machine operators do top-flight work at lower overall costs. With "J&L 1200," the operator obtains: *better machine finishes . . . longer tool life . . . higher rates of speed.* This fact has been proven time and again—in shop after shop.

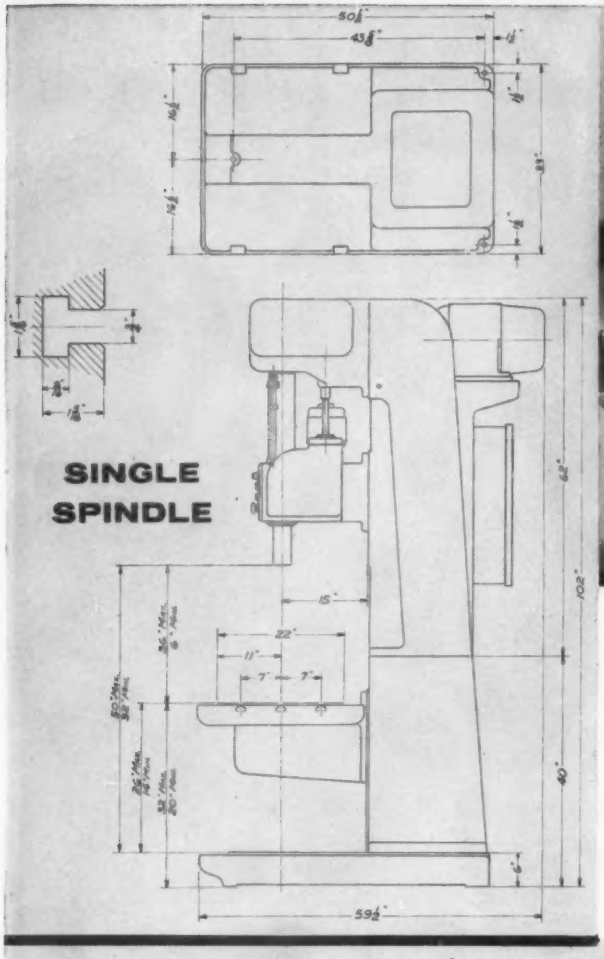
"J&L 1200" grades meet the compositions published by the A.I.S.I. . . . S.A.E. . . . and Federal Specifications QQS-633.

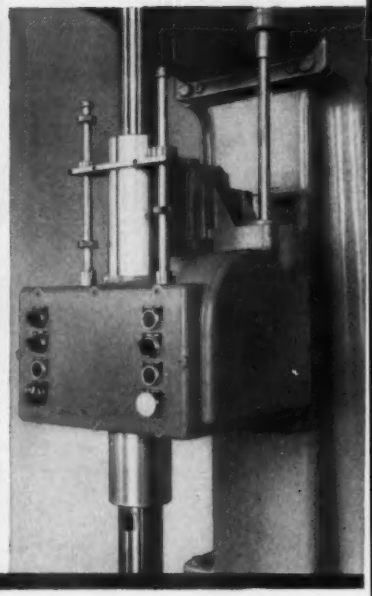
Try this steel in your own shop. Results will convince you "J&L 1200" deserves to be a regular specification for your production runs.

J&L STEEL

Jones & Laughlin STEEL CORPORATION — Pittsburgh

CAN YOU Drill and Tap Holes



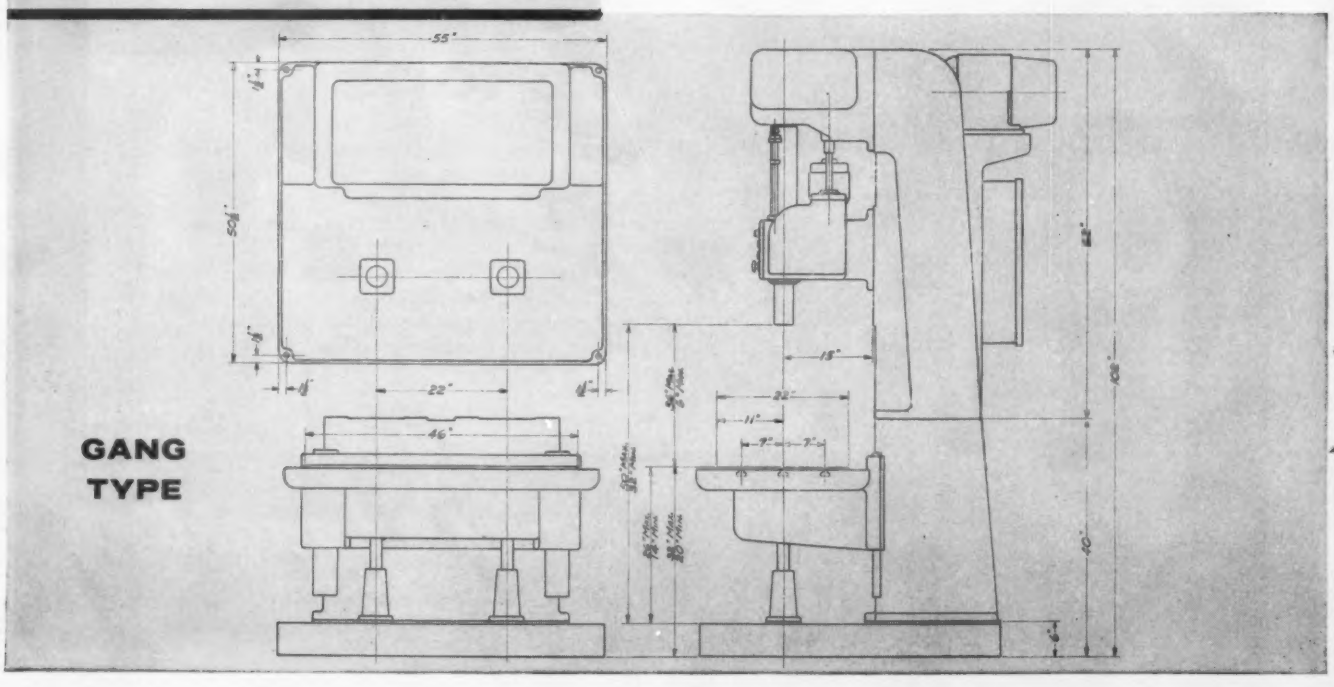


Speeds, Feeds & Tap Leads

A limited number of actually quick change pick-off gears give an unusual combination of speeds and feeds. Geared tap leads are available to cover a wide practical range of tapping operations.

Cycle Control

A simple, rapidly set dog system controls the automatic cycle through limit switches. Terminal block wiring permits extending push-button controls to the most efficient location for unusual jobs.



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Can you change set-ups in minutes ?

Does your equipment set the production pace ?

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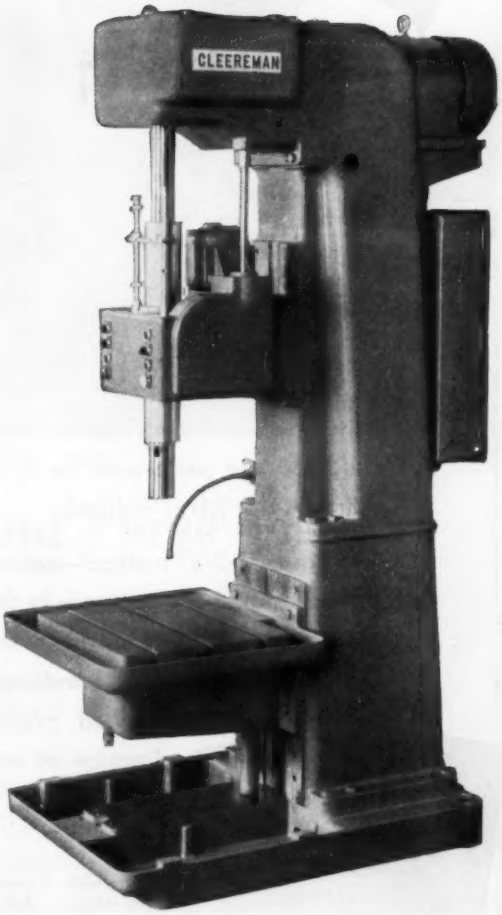
Even if you have short run jobs, you will find the Cleereman Series "A" practical. On long production runs the potential operating efficiency is amazing.

Possible variations, available accessories and special arrangements lend a versatility not found in other designs. Consult your Cleereman distributor . . . he has the answer to your questions.



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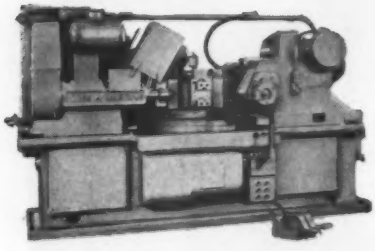


GOSS *and* DE LEEUW CHUCKING MACHINE

When any of the various functions for which this machine is designed are performed on it, no further machining is required. The job is finished.

The basic "1-2-3" method—exclusive with Goss & DeLeeuw—provides for gripping work in the chuck and machining all ends either simultaneously or in sequence. By eliminating several handlings and set-ups, the "1-2-3" method produces finished pieces at a fraction of the time and cost ordinarily required.

Send samples of your work for time estimates. Ask for illustrated literature containing detailed information.

GOSS & DELEEUW
QUALITY PRODUCT-QUANTITY

GOSS *and* DE LEEUW
MACHINE COMPANY, *KENSINGTON, CONN., U.S.A.*

THE BASIC PRINCIPLE behind our problem seems to be that wives of all classes mixed into one common pot cannot get along without bringing up and indulging in personalities. We certainly never can hope to change the human element which has existed from the beginning. It is well known that women are given to idle chatter and gossip. Some of it is done to impress others, and some is done to gain advantage and sometimes to embarrass.

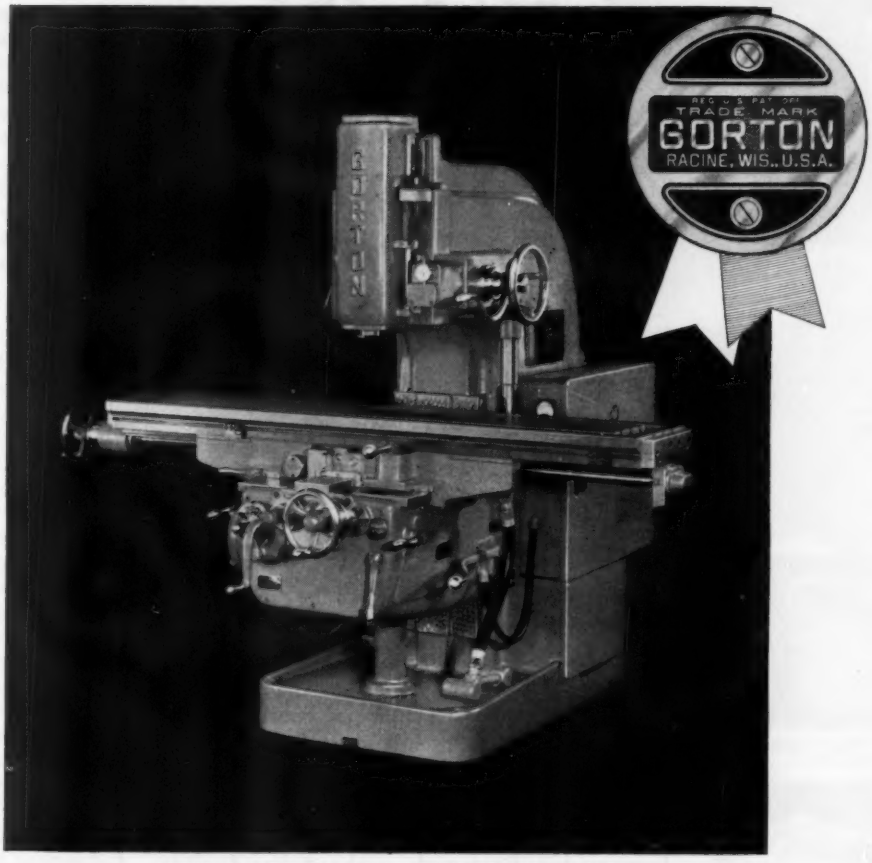
We find this problem very rampant in some towns where only one or two companies supply the work for the community. Here the wives of all classes of workers mingle together at bridge clubs, and all other social activities, and there is the usual amount of gossip. While no one believes less in segregation than the writer, there is a time and a place to use judgment. If groups of workers' wives are lumped together and supervisors' wives seem to be continually taken over the coals, then it is time, certainly, for a showdown.

Business which they know about only secondhand should never be discussed at bridge clubs; certainly not to a point of where pressure is applied. It is known that this happens regardless of the proper thing.

Foremen and other supervisors are subjected to domestic pressure in order that the wife may be "redeemed" at the bridge club. Men often cannot resist such pressure, and injustice is done to the worker. Yes, the giving of a raise to one who does not deserve it is doing the employee a great harm. It builds in him a false hope and this leads many times to his complete failure as a competent worker. So we see that there is a double harm in forced raises coming from idle chatter and malicious gossip.

"Why don't you look where you're going."

GORTON PRESENTS A *Winner!*



NEW GORTON 3-48 VERTICAL MILL

Check Your Requirements and These Features

1. 76" table with 48" table travel.

2. Extended saddle 46" long with 10" heat-treated graphitic steel wear plates.

3. Fullwidth knee with 24½" bearing spread.

4. Square lock bearing guides.

5. 10 H.P. Spindle motor — drives spindle only.

6. 32 spindle speeds from 25 to 2,000 R.P.M.

7. 3 H.P. motor for table, saddle and knee.

8. Mechanical and dual electrical overload protection.

9. Interchangeable Assembly Unit Construction provides obvious advantages.

10. Removable coolant pan for easy clean-out or coolant interchange.

11. Dial-type load meter indicates cutter condition and machine operating efficiency.

12. Spindle drive gear designed to reduce wear and chatter.

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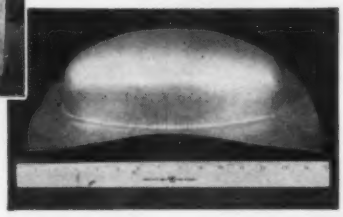
Write for this Gorton General Catalog illustrating and describing this and other machines in the Gorton line. Ask for bulletin 1655-0000. No obligation.

GOODYEAR AIRCRAFT

Slashes TOOLING COSTS by 50 to 75% with HYSOL 6000 Series EPOXIDE RESINS

Cast spinning chuck for spinning aluminum.

.051" thick 51S type aluminum being formed on plastic die which was cast.



.051" thick stainless steel part drawn on plastic die.

Cast plastic hand-forming assembly block.

Plaster mold used for casting of plastic.

Tool being cast into plaster mold.

Material and fabrication time are the major considerations in tooling costs. Goodyear saves 50 to 75% with HYSOL 6000 Series tooling plastics! Here's how: . . . Per volume costs are cheaper than metal. Fabrication time and expense are also cut . . . tools are produced faster and with no increase in personnel or capital investment. A plastic die can be cast or laid up directly from master die models without hand barbering or fitting, requiring little skilled labor and no expensive machinery. Time is slashed, and a tool can be completed and in use within a few days. HYSOL produces more tools per dollar than any other method and eliminates large stocks of various sizes of steel and all metal waste.

Plastic tooling may solve your problems. HYSOL plastics are useful in a variety of molding, casting, laminating, and allied applications. Our research, design, and production departments are ready to serve you. Write, wire or phone.

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OLEAN, NEW YORK

We have the problem of what to do about it. Certainly no foreman who realizes what he is doing will take the easy way out, that of giving in to the worker. Yet the foreman is on the spot because it is his wife who has been taken over the traces. Naturally the best solution is for the foreman's wife to take the problem in hand and state that she does not discuss plant problems, that her policy is that workers must stand on their own merit and fight for their own rights without pressure being applied outside of the shop. Now this stand takes courage, for many a worker's wife will drop her if they think that they cannot get Joe a better position by being kind and sweet —and at times nasty—to the foreman's wife. That is life. We might as well face it.

If the town is a larger one, the woman—our foreman's wife—can leave the bridge club and join another group of women of her own level in business strata. (In a small town this is almost an impossibility.) Here she would be dealing with women whose husbands are on a level with hers. The subject of work and conditions rarely is discussed to gain points of advantage unless a high supervisor's wife is present. We see then that this problem is not just an ordinary worker-level problem. Advice to both the foreman and his wife is to forget the comments; don't make issues of them. This is hard to do, one realizes, but to have the foreman go to the worker and talk about things which he has learned through his wife is a dangerous course to take.

It has been known to cause divorce action within the worker's household. The worker, to vent his energy, talks

"Well, which was it this time? Water cooler, rest-room, or Shirley over in supplies?"

to his wife, but not to have it go further. When it gets back to him through his wife's gossip to a foreman's wife, then he really blows his top. The company has cause to become disturbed for it affects the worker's ability to produce.

The best advice is never to listen to the idle tongue that is hung in the middle and wags at both ends. It spreads only gossip which falls upon ears that are ever ready to cause trouble. Remind your wife that business and its problems are of a company nature, and not a public one.

Charles D Townsend
West Hartford, Conn

AL SHOULD PAY NO ATTENTION whatsoever to the gossip he hears through the bridge club. Wives are not educated to handle men in their work and should not therefore meddle in their husbands' occupations. If he listens there'll be no end of the gossip. New complaint will be advanced, and really it's unworthy of any foreman of high morale to have anything to do with such gossip.

There are probably a lot of uncritical talks released at such clubs, especially if cocktails are part of the refreshments served, and that's reason enough not to consider them too seriously. Mistreatment may be part of some foremen's policy, thinking they thereby are strong men, or doing their company favors. Such mistreatments, however, are always judged differently from the worker's and the foremen's point of view, but they should not be discussed at club meetings; they are better handled through union officials. Under no conditions should Al pay any attention to the guy's wife's threat what to tell him. A statement like that shows enough to draw the conclusion that she is spoiling things for her husband instead of favoring them, and that she is utterly ignorant about the necessary rules practiced in any machine shop.

The secret gripe left with Al, which he cannot talk to the man about, should not prevent him from going about his duties as usual. Of course, if Al knows the gripe is justified, he should not continue the mistreatment any longer. If it is not justified, he should ignore the whole thing.

Ed's suggestion that if a guy can't work up enough nerve to complain to Al direct, the grievances are not serious enough to worry about, is however, too quick a conclusion. It is really true that some people dislike to complain to their foreman. The

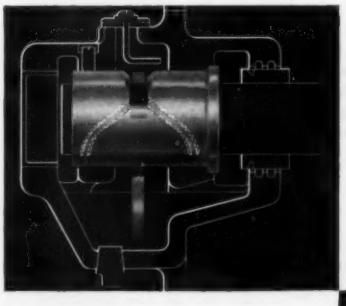
SIMPLE,

low cost housings suffice

FOR BUNTING BEARINGS

The size and weight of parts required to support a bearing sharply affect initial cost and production costs. Because the Bunting Bronze Bearing is much smaller in diameter than other types of bearings required for similar applications, the supporting parts are lighter and lower in cost.

You can easily learn what economies can result from your use of Bunting Bronze Bearings. There is a Bunting engineer near you for consultation. Or write our Product Engineering Department at Toledo.



The weight of parts required to support a bearing varies directly as the square of the outside diameter of the bearing. The Bunting Bronze Bearing is much smaller in outside diameter than other types.

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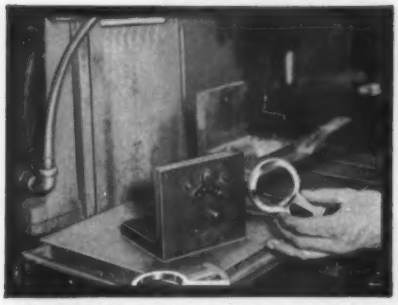

● Facing this thin wall bronze casting formerly took 9 min. on engine *lathe* — now takes 2 min. on wet-belt grinder.

● Generating radii on forged aluminum gun mount stepped up to 120 pcs. per hr. — double rate of *filing*.

● Ammunition box rim originally *milled* for close fitting cap at 33 per hr. — now abrasive belt ground at 89 per hr.

● Angle face on hardened steel cutter bar; output by *surface grinder*, 4 per hr. — by abrasive belt method, 14 per hr.

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How many flat-surfacing, squaring and beveling operations in your shop are performed by millers, lathes and other slow cut-by-cut methods? These single piece operations can be done on abrasive belt grinders in seconds, rather than minutes. More, you often eliminate the need for expensive fixtures—frequently save 75% to 90% of former set-up time.

Find out how Engelberg Abrasive Belt Grinders can reduce your costs. Send sample piece for our recommendations—or ask to have a sales engineer call. To see what others have accomplished, mail coupon for free 32-page case history booklet.

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Please send free booklet showing how abrasive belt grinding performs grinding, surfacing, stock removal operations faster, better, more economically.

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mistreated man may have a bashful character that prevents him from complaining; he may be sick, or have such economic burdens to carry that he feels he must keep silent so as not to risk his paycheck even for a single week. His wife may be more courageous, and therefore has taken the matter to the club.

Al's wife should tell the other man's wife politely she didn't want to discuss things she didn't know anything about; that should prevent any fight developing.

Switching to another bridge club where none of the women are wives of any of Al's workers seems sensible enough, but perhaps it would be still better if the wives of the foremen in the community had a bridge club of their own. This would to some people be undemocratic, but perhaps the best solution of the problem to prevent this kind of gripe. I don't think it will ever be possible to practice strictly democratic principles under all conditions. Of course, then there would be other kinds of gossip, but that would probably be of the more unimportant kind such as Mrs Al's or Mrs Ed's clothes, etc. If Al's wife insists on going to the original club he should instruct her how to handle matters of this sort.

If Al's wife gets mad at him because he is letting the situation go on like it is, it proves she is not a very good companion. If Al decides against his wife's wishes she should be told to understand that he has more experience on disciplinary matters than she has and takes the responsibility for any situation that may arise. This will relieve her of the corresponding burden. If she is stubborn, and takes no heed, Al may have to apply some mild pressure and explain why he cannot do otherwise. If Al's wife still doesn't understand,

"That's not a new department . . . only for short-run production."

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and blades that hold it!

to give you faster, straighter power hack sawing

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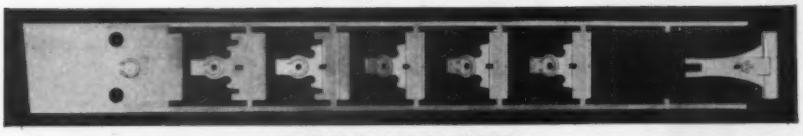
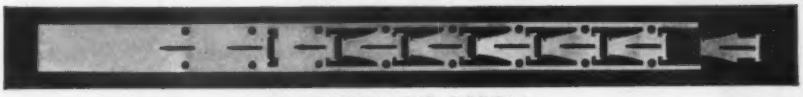


7 STATION DIE RIBBON



9 STATION DIE RIBBON

5 STATION DIE RIBBON 3 STATION DIE RIBBON 3 STATION DIE RIBBON

Send today for the fact-packed, picture story of "B. Jahn Production Proved Dies!"

B. Jahn

THE B. JAHN MANUFACTURING COMPANY, NEW BRITAIN, CONNECTICUT

he should ignore her too. Telling her to mind her own business would probably disrupt some of their marriage agreements and perhaps leave an unrepairable mental wound in both minds.

A E Fristedt
Stockholm-Bromma, Sweden

OUT THE BACK DOOR

Is an arbitrary retirement age good in principle? If it is 65 now, may it not be 60 in another ten years? Can there be any flexibility in application, or, once it is established, must it be enforced?

I AM MUCH INTERESTED in the subject of retirement, as I feel it means more than many seem to think, both to the company and to the employee. I completely agree with Ed that compulsory retirement at 65 is not to the best interest of either the company or the men. Al's statement that no exceptions should be made brings us to one of the fundamental errors in many businesses. It also approaches the dictums of the police state that most of us abhor. This state of mind tends to defeat the freedom of the individual that we all believe in as the foundation of democracy.

The idea that management is simply a set of rules is what makes so many large companies unpopular with their men and why so many are not as successful as they should be. All businesses must have rules as a general guide. But if rules are all that is necessary where does the management come in? All they need is a policeman to enforce the rules laid down.

"Had a swell day — rejected 70 per cent."

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The real manager is the man who will break the rules of ordinary procedure to meet special cases.

Industry is losing a lot by the enforced retirement of men and women who can not only contribute to it, but who prefer to do so, for some time after reaching their 65th birthday. Many workers may be glad to retire at 65. Many should be retired before that age, especially in business organizations which cling to the seniority rule. Too many men with outmoded ideas, who still think in terms of 40 years, or even ten years ago in some cases, still dominate many businesses and committees.

I recently read of one concern who provided desk and office room for executives who had been retired. Regular attendance is not expected. But men who have attended business regularly for years rarely want to sever all connections, especially after they have taken a three or six months' vacation on reaching the retirement age. In many cases even the clang of the alarm clock, which they cussed before retirement, may have a welcome sound.

Retirement should be as flexible as possible to utilize what the older employees prefer to give, both for their own morale and to add to our productivity.

Fred H Colvin
Point Pleasant, NJ

IT IS MY CONTENTION that it is unfair to establish a definite retirement age because many men will reach that age and be forced to retire even though they are better workers than some of the younger men in the shop.

We shop people are supposed to

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Two Stage Vane Pump (2000 psi)

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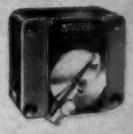
Pressure Reducing Valve

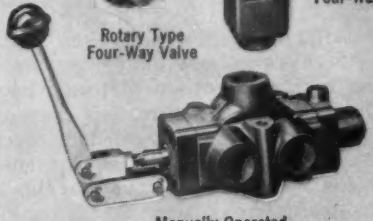


Flow Control Valve with Hydrostatic Compensator

DIRECTIONAL CONTROLS

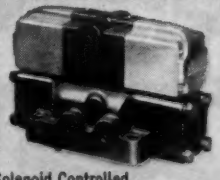
Rotary Type Four-Way Valve

Plunger Type Four-Way Valve



Manually Operated Four-Way Valve

Pilot Operated Four-Way Valve



Solenoid Controlled Pilot Operated Four-Way Valve

Solenoid Operated Four-Way Valve

Check Valve

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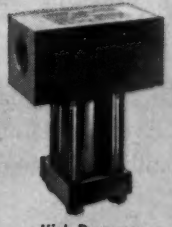

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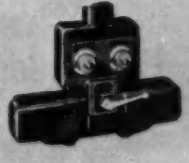

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be a practical-minded group so why not take a more practical attitude? The decision as to whether to keep a machine or replace it is based on the ability of the machine to do the work, and not on its age alone. Therefore why not extend this same thinking to the question of employee retirement? Why should a man who turns out a good day's work be replaced?

We have discussed this question in our shop on a number of occasions and I have given this matter serious thought. It is my opinion that a specific retirement age is not the best answer.

When a man applies for a job he is given an interview and frequently a physical examination in an effort to determine his ability and his fitness to do the job. If they think he can do the job, he is taken on. If he does his job well, he is kept on; not because he is of a certain age, but because he is doing his job. He continues working and they continue paying him because they are satisfied with the work he is turning out. And then as that certain day approaches he is told he is no longer needed. Not necessarily because his work is falling off, but simply because the earth has completed a certain number of trips around the sun.

After an employee is taken on he gets a raise now and then until he reaches a certain plateau where he becomes a fixture. His position there is taken for granted in much the same way as the lathe or planer he is operating. I believe that this is basically wrong. Why not review his position every few years by, in effect, repeating the interview and physical examination? Maybe the company can make better use of his skill in another department; maybe he should be given lighter work. In this way the employee and the company will know where they stand. This review and examination can disclose to the company just how much longer the employee should

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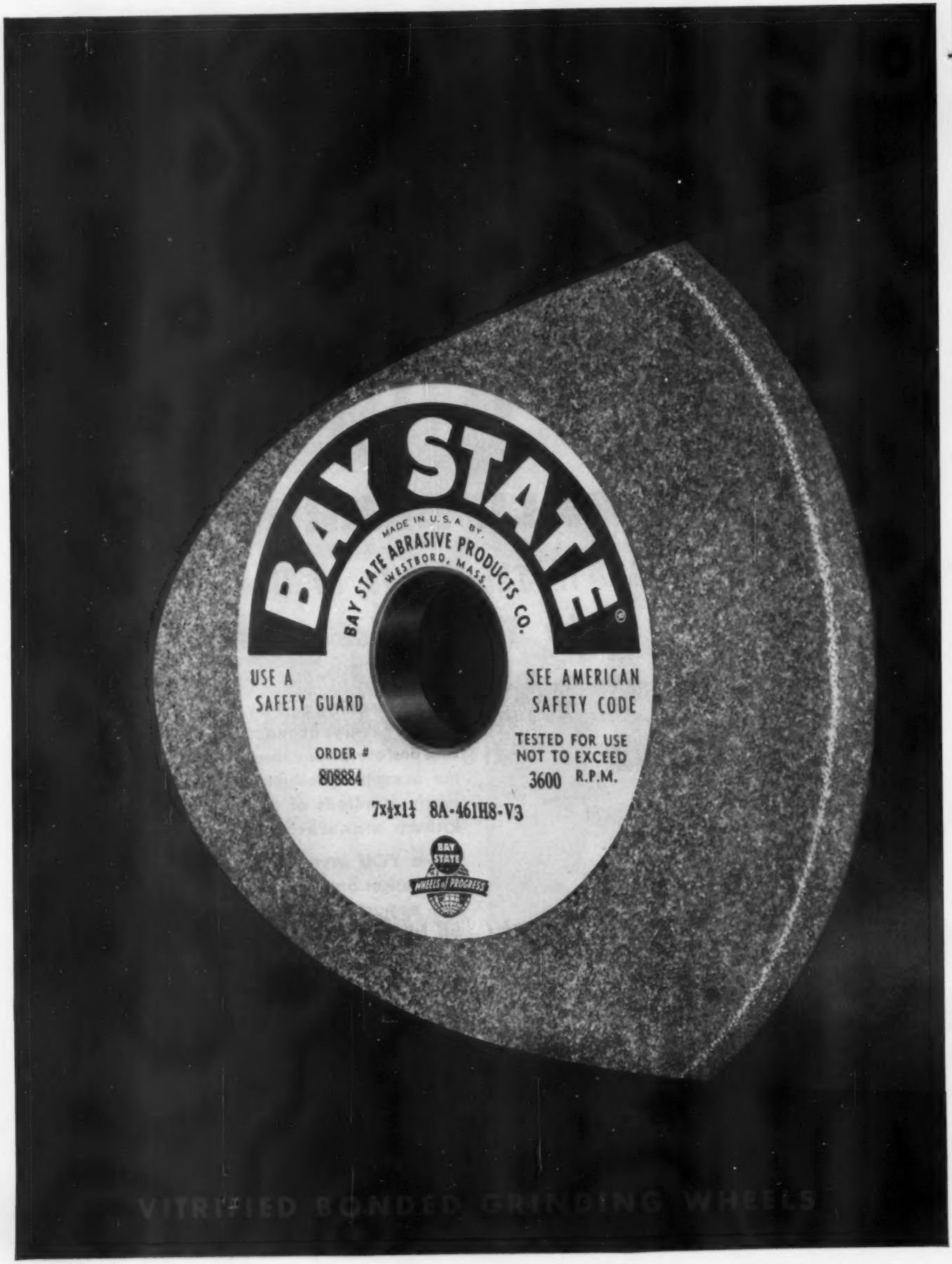
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WHEELS of PROGRESS
VITRIFIED BONDED GRINDING WHEELS

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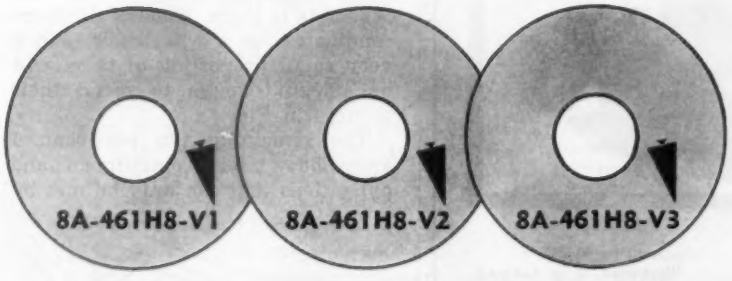
TWO EXTRA OPPORTUNITIES!

For each single hardness grade standard in the industry for precision grinding, BAY STATE makes *three* grade divisions. These "Fractional Grades" provide you with two *extra* opportunities to get a closer "fit" of vitrified bonded wheels for your grinding operations.

This extra refinement is standard at BAY STATE. Such close control, developed through advanced manufacturing techniques, means that BAY STATE does a *better* job of duplicating successful wheel specifications.

For improved precision grinding, get the *extra* benefits of "Fractional Grades" . . . with BAY STATE "WHEELS OF PROGRESS".

HERE'S PROGRESS IN GRINDING



(a) **FRACTIONAL GRADES** (b)

The three wheels above vary only in hardness. The middle one, with the figure 2 marked by the arrow, has an exact hardness of grade H. It is flanked by the two *extra* grade divisions you can get from BAY STATE:

(a) 1 means 1/3 *softer* in grade H.
(b) 3 means 1/3 *harder* in grade H.

Such extra, *standard* specifications mean progress in grinding for you . . . from BAY STATE.

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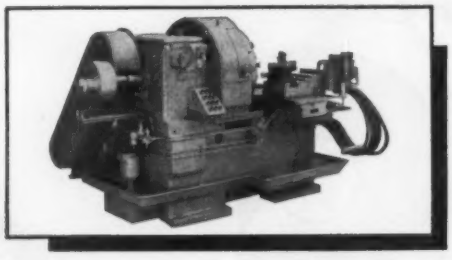
Solve YOUR PUMP PROBLEM



with a RUTHMAN GUSHER coolant pump

Illustrated is a LeBlond Automatic Contour Facing Lathe equipped with a Ruthman Gusher Coolant Pump.

Choose a Gusher Coolant Pump for performance, economy, long life. Built of the finest materials, Gusher Pumps give split-second coolant flow, as much or as little as you want. Your Gusher needs no priming or packing, uses less power when throttled. Precision workmanship assures long trouble-free life. Specify Gusher Pumps to solve your coolant pump problems.

THE RUTHMAN MACHINERY CO.

1818 Reading Road Cincinnati, Ohio

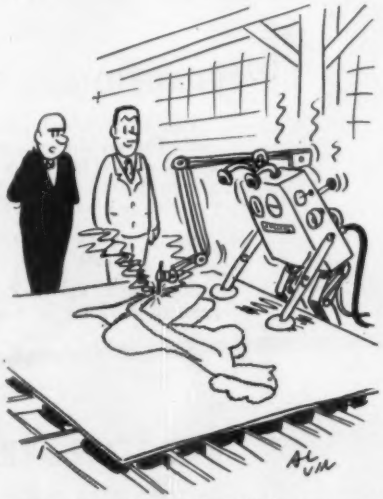
be kept on. This procedure makes it possible for the company to give the employee, in advance, a general idea of how long he will be kept on. And even more important, it gives the employees an incentive to keep their work up to standard and to take care of their health.

H G Koslow
Bronx, NY

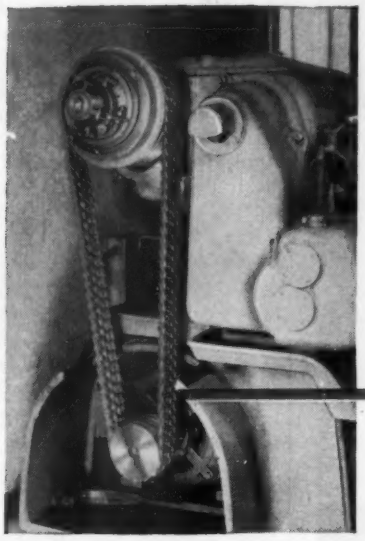
STATISTICS TELL US that the span of human usefulness is being extended more and more, aided and abetted, no doubt, by the ever-increasing use of labor-saving machinery. A man of 65 is not the worn-out shell, speaking comparatively, that his counterpart may have been in the not-so-gay nineties when mechanization was in its infancy and factory hours stretched from rise to set of sun.

Today I work beside men in their 60's who think nothing of driving an automobile 20 and 30 miles to the job, put in a productive eight-hour-day and drive home again, looking forward to their leisure time activities which certainly don't include slippers and an armchair. At least 90 per cent of them, (and I have discussed it with them) however, are looking forward to retiring at 65 when they become eligible for the pension list. They feel, not without reason, that they have done their share of the world's work and deserve the increased leisure time that is coming to them. None of them are candidates for a wheelchair, and a very small proportion of them will be affluent enough to spend their winters in Florida.

The remaining ten per cent, I know, have family commitments and obligations that can only be met by



"That automatic machine thinks too much like a man!"



Performance Proves

20% to 90%

LESS VIBRATION

with Veelos—the Balanced V-belt

Engineers have long known that there are four principal causes of machine vibration: 1. bearings; 2. motor; 3. clutch; 4. sheaves. Often overlooked is a fifth cause: v-belts. And, in many instances, *v-belts alone* are the major cause of vibration.

There's a logical reason for this.

Regular v-belts have spots of varying density due to their construction. Normally, these spots are not apparent, yet they throw the belt out of balance when the drive is operating. As a result, vibration is created that can damage bearings, shafts and, most important, the finished work.

This is not true of Veelos v-belts.

Veelos is absolutely uniform throughout its entire length. Every link and every stud is identical. The smooth, machine-cut sides and the laminated construction assure smooth, vibrationless power delivery. Veelos is perfectly balanced.

In case after case, installation of Veelos v-belts has reduced machine vibration 20% to 90%.

Proof that Veelos will reduce vibration can easily be demonstrated with an electronic vibration analyser. This analyser measures amplitude of vibration to as low as 2-millionths of an inch.

Fifteen minutes of your time is all that is required to show you with the electronic analyser that Veelos creates less machine vibration. Drop us a line or clip the coupon for a demonstration.

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Yes, I would like a demonstration. **Have your representative call me for a convenient time.**

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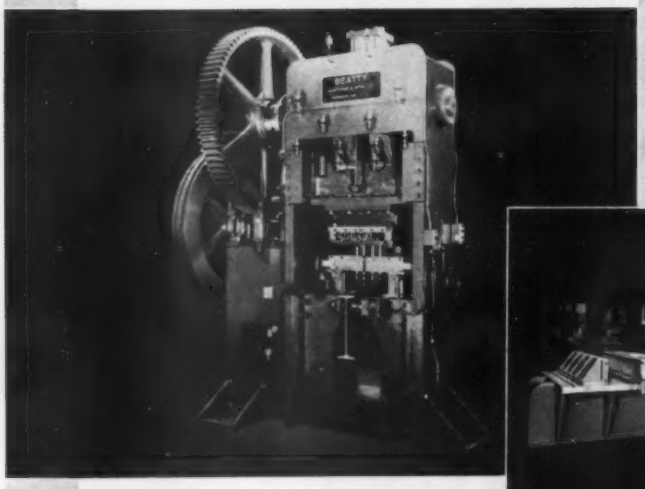
ADJUSTABLE TO ANY LENGTH • ADAPTABLE TO ANY DRIVE

Veelos is known as Veelink outside the United States.

20V

Beatty Beam Punch has ADJUSTABLE TOOLS

–punches flanges in "I" and WF beams!



BEATTY Horizontal Hydraulic Bulldozer for heavy forming, flanging and bending.

Here's a new versatile Beatty machine that is ideal for the structural steel fabricator who runs a miscellaneous job shop and requires frequent set-up changes. The new guillotine beam punch, with 200 ton capacity, features built-in adjustable tools for flange punching "I" and Wide Flange beams. A turn of a handwheel provides quick change of punching centers and synchronizes punch with die at the same time. These tools consist of two frames which open and close about the center line of the beam. It has four punching units; minimum inside setting is 2¼", maximum 6¾". Centers between inside and outside punches can be adjusted from 2¼" to 3½". For specific details on improving metal fabricating production—consult your Beatty engineer!

BEATTY Guillotine Beam Punch. Punches webs and flanges in "I" beams from 6 to 30 inches.

BEATTY Spacing Table handles web and flange punching without roll adjustments.

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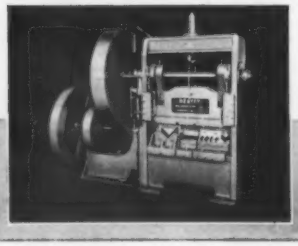
BEATTY Gap Type Press for forming, bending, flanging, pressing. Capacity 250 tons.



BEATTY Guillotine Bar Shear for angles, bars, rounds, squares without changing tools.

a far larger weekly paycheck than the pension and retirement pay will bring.

Fortunately, the company I am with does not make retirement at 65 a hard and fast rule. A man may apply for an extension and, provided he is physically able to perform his duties, keep on working long after retirement age. I have not noticed a marked loss of efficiency in any of those workers who are working on extension. In fact, some of them hit the ball harder than workers many years their junior, and require less supervision.

That is why I am definitely of the opinion that a man's span of usefulness to a company or community cannot be measured by the yardstick of years. If a man feels happier working and is able to keep his end up production-wise, why condemn him to the sidelines?

So I say, let the company set a 65-retirement limit if they will, but admit exceptions to the rule wherever their considered judgment warrants them and where reasonable physical requirements can be met.

Robert S Alexander
Glastonbury, Conn

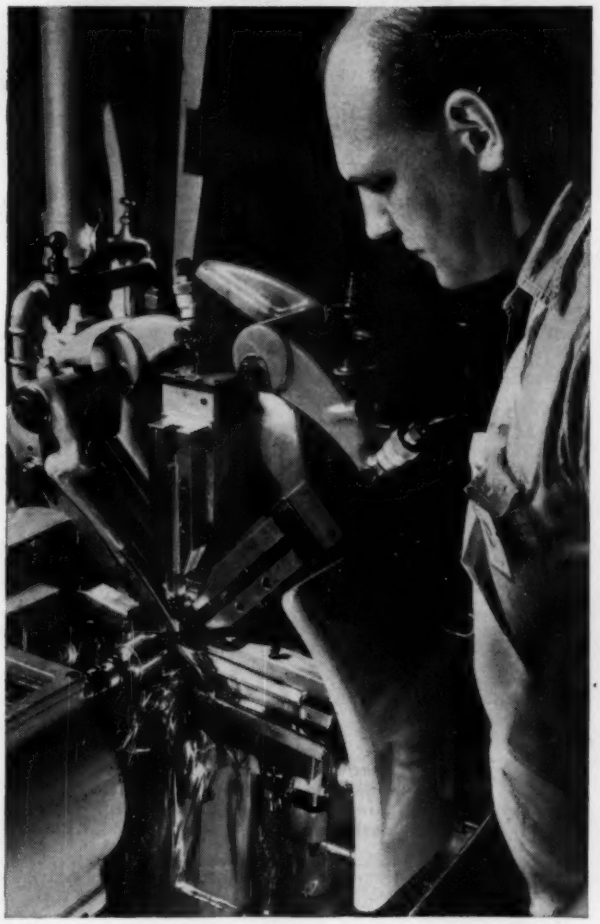
ACCIDENT-PROOF, FOOLPROOF

What measures can, or should, be taken to make workers safety-conscious, once proper equipment has been installed in the plant? Is this management's responsibility, or are workers on their own?

IN "BIG BUSINESS," where employees are represented by a bargaining agent, management is responsible for safety. A typical clause in a company-union contract reads, "The Company will continue to provide systematic safety inspections, safety

For better results in every machining operation –this precision instrument plant uses . . .

GULF LASUPAR CUTTING OIL



After careful tests on many brands of cutting fluids, the Belock Instrument Company of Long Island, New York, has found that Gulf Lasupar Cutting Oil gives them better performance over their entire range of machining operations on every type of steel they process.

It helps them produce precision instrument parts to extremely close tolerances, with excellent surface finishes and few tool changes.

Gulf Lasupar Cutting Oil has three degrees of sulphur activity—(1) extremely active sulphur held in a stable solution, (2) sulphur combined with mineral oil by a special Gulf process, and (3) sulphur combined with fatty oil. This combination means that you, like the Belock Company, will get better results on those jobs where finish, cutting speed, or tool life is a problem.

Simplify your cutting fluid storage and handling by ordering the oil that will give excellent results over a wide range of machining operations — Gulf Lasupar Cutting Oil. Contact your nearest Gulf office today for further information.

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GULF REFINING COMPANY
1822 Gulf Building, Pittsburgh 30, Pa.

GULF

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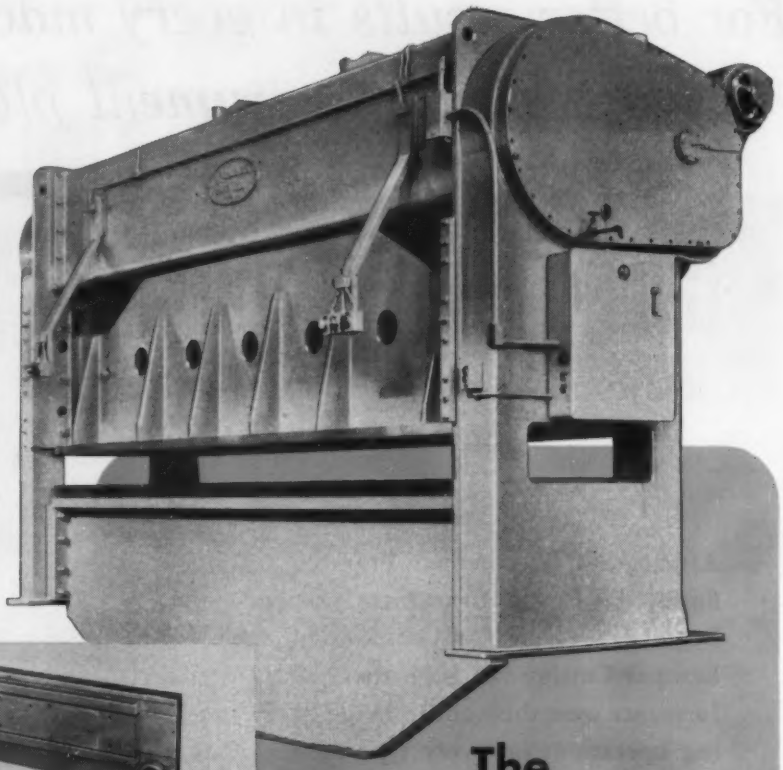
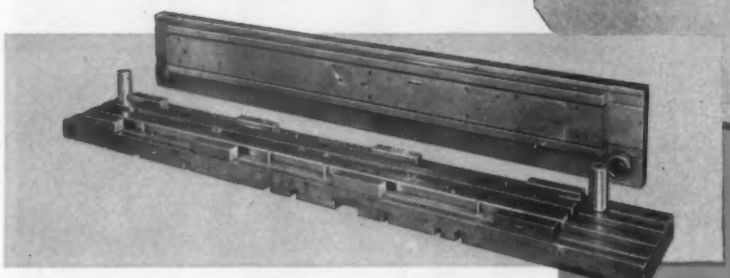
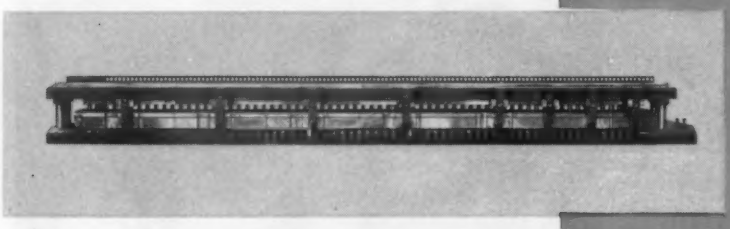
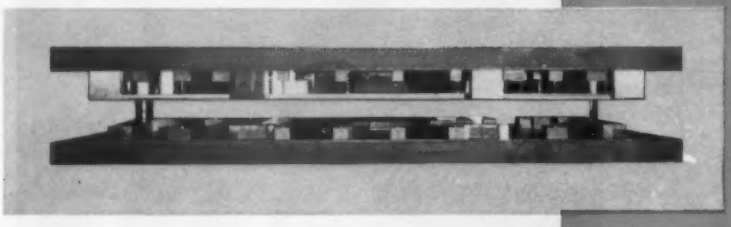
Specially designed for PRE-FORMING your appliance cabinet material









The Struthers Wells PUNCHING and NOTCHING Machine

This versatile equipment permits rapid changeover of die sets used in processing steel sheets prior to roll forming, and affords maximum precision and convenience in service. With a capacity of 200 tons, the machine's bed and ram platen are 192" long x 48" wide maximum; 96" long x 36" wide minimum. Stroke is 5", with operating speed of 30 strokes per minute. Start, single stroke, continuous run and inching controls are provided. Write for full details.

Special dies for notching, punching, embossing, flanging, etc. are furnished to specification with each machine.

Struthers Wells

MACHINERY DIVISION

STRUTHERS WELLS CORPORATION

Titusville, Pa.

Offices in Principal Cities

devices, guards, and medical service to minimize accidents and health hazards on its premises." Under local agreements it is permissible to discharge an employee for a deliberate and serious violation of a safety rule.

Managment promulgates the following message to all employees: "Safety is your business 24 hours a day. Nothing you do is so important or so urgent that you cannot take time to do it safely. Do your part. Take time for 'safety thought' before doing each job."

Nevertheless, accidents occur in large industrial plants. Human nature being what it is, management has been more successful in making its plants accident-proof than in making them foolproof. Workers and supervisors have become safety-conscious. Safety campaigns go on week after week and year after year. Progress is slow, largely because so much progress has already been made.

Future progress is dependent upon the enforcement of discipline. Safety rules can be obeyed and should be obeyed. It is true that few, if any, men have been discharged for a serious violation of a safety rule. The chief reason for this in our plant is because they would be so discharged.

We are familiar with the predicament that Bill got himself into. Bill is a foreman, a likable, esay-to-get-along-with fellow. A steel chipper, named Joe, worked for Bill. Joe had a habit of forgetting to wear his safety glasses once in a while. This was serious. Bill warned Joe several times, but never got real tough about it.

When Joe came back to work with a glass eye Bill was in the vanguard of a large group gathered to welcome Joe. Joe refused to shake hands with Bill.

"Bill," blasted Joe, "its your fault I've got this glass eye. You should

"There! I'd like to see ACME equal this design!"

Helical Mills in Carbide

WENDT-SONIS SHEAR-CARB

Helical carbide teeth of Shear-Carb mills give you:

SMOOTHER FINISH because the helical tooth maintains a constant cutting relation between the work piece and cutting edge. The chip formation is uniform at all times.

2 to 3 TIMES LONGER TOOL LIFE because tool shock is greatly reduced when Shear-Carb teeth engage the work. Tool can be run at greater feeds and speeds.

25% LESS HORSEPOWER because of the shear cutting action of each helical tooth. In actual tests Wendt-Sonis Shear-Carb mills required approximately 25% less power.

COMPLETE LINE You can get Wendt-Sonis Shear-Carb end mills with straight or tapered shanks from ½" to 2" in diameter and shell mills from 1¼" to 6" in diameter . . . in styles and carbide grades to machine any material.

MAIL COUPON TODAY

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Hannibal, Missouri

WENDT-SONIS COMPANY
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Please send me literature on new Shear-Carb mills.

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HYDRAULIC MARKING MACHINES by Parker

UNSURPASSED FOR EVERY PRODUCTION MARKING APPLICATION

AFFORD FASTER, BETTER, MORE ECONOMICAL MARKING OF ANY LEGEND . . . ON ANY MATERIAL . . . AND EVERY CONTOUR!

No. 650 PARKER MARKING MACHINE

Parker Marking Machines are unmatched for versatility—stamp lettering, trademarks, graduations, knurling in limitless varieties on flat, irregular or curved surfaces of different diameters. Each impression is clean and sharp—indelibly stamped to uniform depth—in far less time, to far greater precision than the finest hand marking.

PARKER CAN PRODUCE A TOOL TO SPECIFICATIONS FOR ANY MARKING MACHINE!

Interchangeable type holders . . . roll dies . . . flat dies . . . engraved knurls—whatever your requirements, Parker engineers and craftsmen can produce a marking tool to your specifications to fit any marking machine.

GET COMPLETE INFORMATION:
Send today for literature on the Parker 650 Marking Machine.

THE PARKER STAMP WORKS, INC. by Parker
MARKING DIE & MACHINERY DIV.
FRANKLIN AVENUE • HARTFORD, CONNECTICUT

have made me wear safety glasses. I'd be better off now if you had fired me."

The loss of Joe's eye, and it was a smiling Irish eye, has and will continue to prevent many an accident. Foremen are not so easy to get along with now where safety violations are concerned. A foreman likes to look his men squarely in the eye. There is one man Bill cannot bear to face, let alone look in the eye. Don't let this happen to you.

"That's all right for big business," you may say, "but small business is different. We have a hard enough time competing as it is. We have little money to spend on safety campaigns."

My advice is to get the money to protect your competitive position. Small and big business do more than compete for customers. They also compete for labor. Men are reluctant to work in a shop which has a poor safety record. A man's wife, his parents, his friends would advise him against doing so.

It took the loss of Joe's eye to put teeth in the safety rules of one shop. The firing of Joe would have accomplished the same purpose. Take your choice. Don't be afraid to look your men in the eye.

Peter A Seward
Swampscott, Mass

THERE ARE SOME FOLKS who always seem to be having accidents and a good foreman will see to it that they are given jobs which are as near accident-proof as he can find. If this does not get safety for them then the only thing possible is to transfer the person to some other job, or issue a discharge slip. It is a tough attitude to take, but a person who does things first and thinks about the

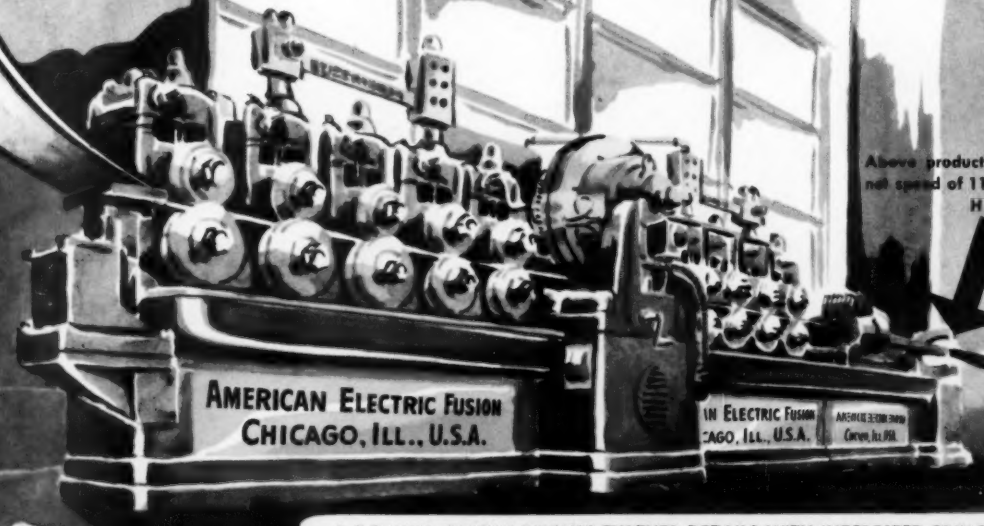
"Oh, Dave . . . I think I've found the bottleneck!"

"Roll your own"

HYDRAULIC TESTER FOR CODE PIPING BEFORE SHIPMENT

ROME CABLE CORP. SAYS:

During five day week in September 1950 2 A.E.F. Mills operating 16 hrs. per day gave us net production of 1,111,313 ft. of conduit



Above production figures mean net speed of 116 feet per minute HERE

A.E.F. WILL GLADLY DISCUSS FURTHER DETAILS WITH INTERESTED PRINCIPALS
ADDRESS INQUIRIES TO 2600 DIVERSEY AVENUE, CHICAGO 47, ILL.
AMERICAN ELECTRIC FUSION CORPORATION

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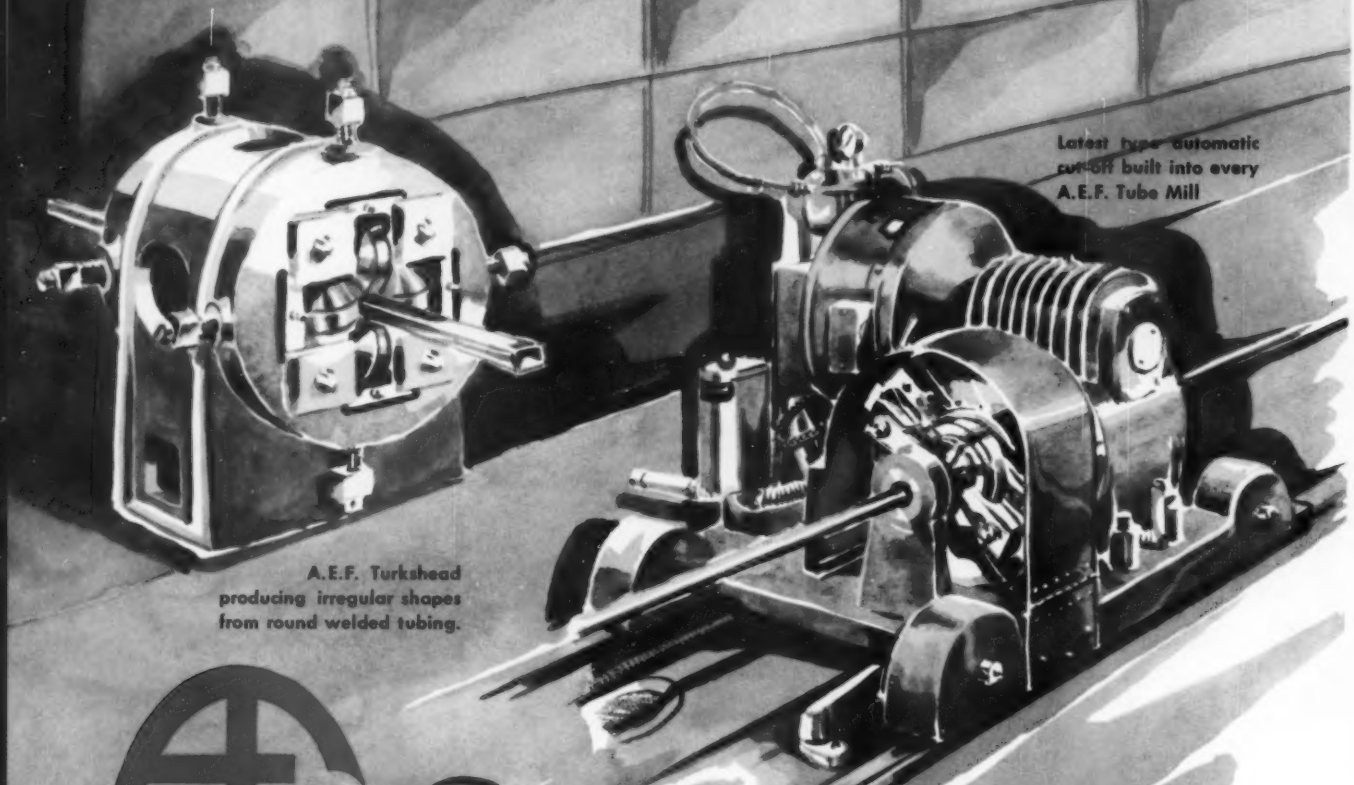
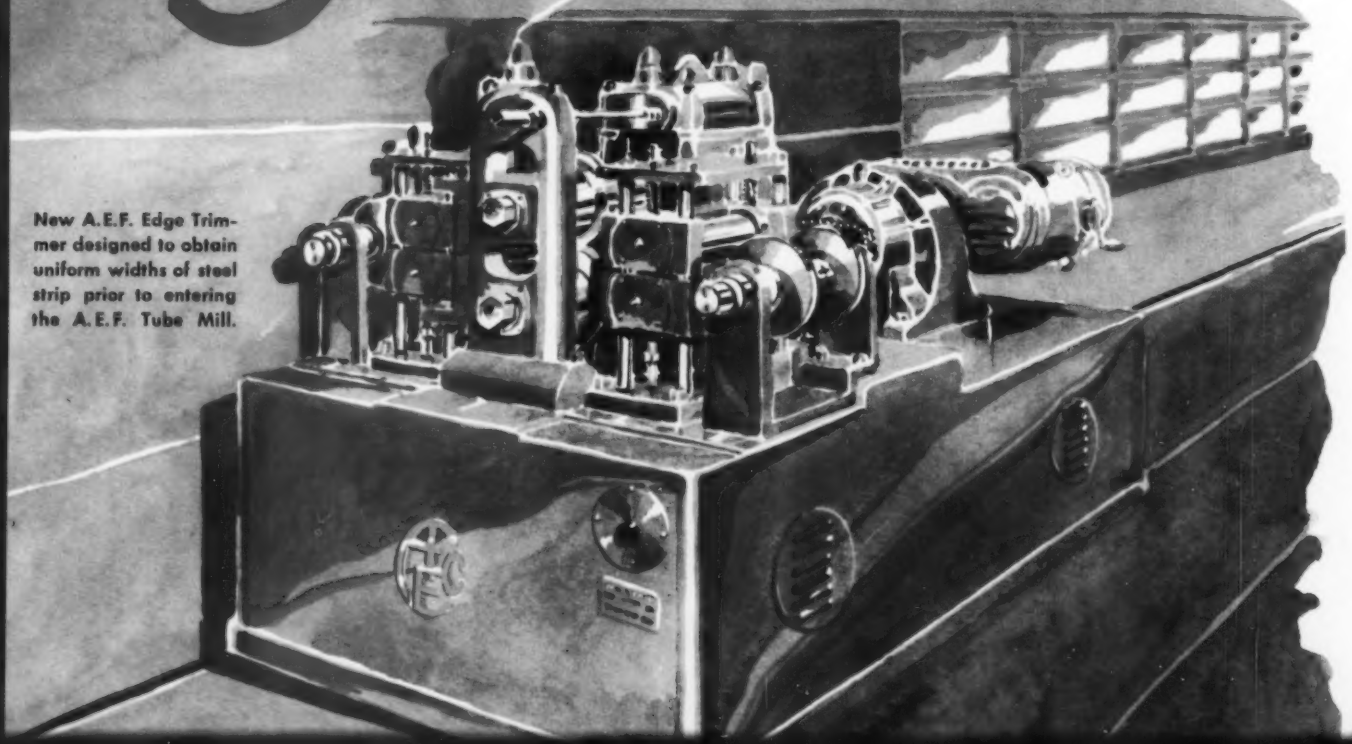
2600 DIVERSEY AVENUE
PHONE — BRUNSWICK 8-1640 CHICAGO 47, ILLINOIS



Latest type automatic cut-off built into every A.E.F. Tube Mill

A.E.F. Turkshead producing irregular shapes from round welded tubing.

Sound design — first
Good appearance always



New A.E.F. Edge Trimmer designed to obtain uniform widths of steel strip prior to entering the A.E.F. Tube Mill.

consequences afterwards, whose movements are ahead of his carefulness, is apt to be a very expensive person to have in a machine shop and foremen are employed to keep costs down.

The problem man is the one who thinks he is so wide-awake and smart that he needs no gadget to protect him. He laughs at the goggle wearer, pushes emery wheel and power-saw guards into the "death" position and calls men sissies who will not operate anything unless the safeties are all properly set. A good foreman can train him, but the foreman must be the kind who is said to have eyes in the back of his head. The first time he finds Bill grinding without goggles he gives him a curt lecture on the danger involved and then says that now Bill has been fairly warned, the next time he is caught it is going to cost him $5 and at the next infraction Bill actually has to pay the $5 or quit. He thus found that the foreman meant every word he said. Bill is very apt to become safety-conscious.

The next is the careful and conscientious workman who may have an accident sometime. This man requires an entirely different handling and, perhaps, an example of how one such accident was handled by the superintendent will be a good illustration. Old Tom had charge of a large steam engine that drove a powerful armor-plate mill. One cold morning he overslept; when he arrived at the mill he found the gang had been waiting several minutes and this made Tom feel bad. In his rush to get things going he did not sufficiently blow out the steam line and cylinders with the result that a slug of water got inside one of the cylinders and in a flash the head was stripped off the studs. This, of course, shut the mill down until a set of new studs could be installed. Tom figured he was through, so he quickly gathered up his belongings and started for the gate. On his way he met the superintendent who was hurrying to the mill to find out what was wrong.

"What's the matter Tom?"

"The shutdown is entirely my fault," said Tom, and he explained what he had failed to do.

"And where are you going," the superintendent asked.

"I'm going home. You won't want me around any more. I've cost the firm plenty today with my carelessness," answered Tom.

"Snap right out of it, Tom," said the superintendent. "You get back in the mill where you ought to be right now, and do all you can to get

in Stainless Steel Tube Sheet

Illustrated is a rugged drilling operation that uses the durability and cutting speed of standard Whitman & Barnes High Speed Drills. This 446 stainless steel tube sheet for a special heat exchanger in a chemical plant requires 602 holes 2 11/16" in diameter be drilled through the 2½" depth of the sheet. W & B drills are operated without regrinding for approximately four hours at 69 R.P.M. and with .012" feed. For the best in drilling performance on your every operation—specify W & B.

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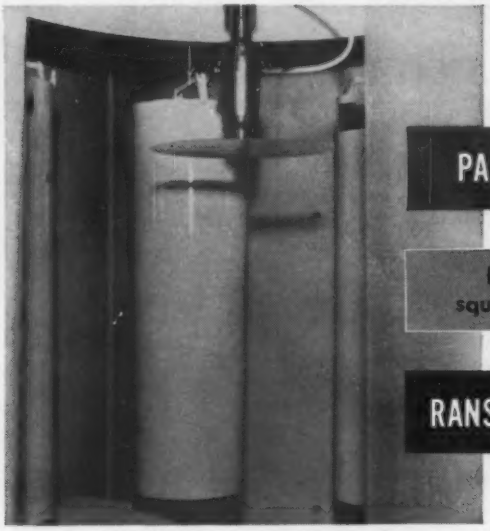


PAINT MILEAGE JUMPS

from 370 to over 600 square feet per gallon with

RANSBURG NO. 2 PROCESS

● When General Water Heater Corp., in Burbank, Calif., switched from hand spray to Ransburg No. 2 Process in painting water heater jackets, paint mileage increased almost 65%. Where General formerly got 370 square feet per gallon of paint, they now get over 610 per gallon.

On this installation, units ranging from 20 to 100-gallon size are painted with Ransburg No. 2 Process reciprocating disc atomizer. Changes in jacket sizes can be made without stopping the conveyor. With the reciprocating disc atomizer, change in stroke length is made "on the fly" without shutting down production. General also paints smaller parts, such as heater tops, bottoms, doors and legs, with the Ransburg equipment.

In addition to paint and labor savings, General Water Heater is getting "excellent consistency" and a high quality finish on their products. Another on-the-job-example of the unmatched efficiencies of the Ransburg No. 2 Process of electrostatic spray painting!

Ransburg maintains complete laboratory facilities for test-painting YOUR products under simulated production conditions. Why not let us show you what Ransburg Electrostatic Processes can do for you in YOUR finishing department. No obligation.

For further information about Electrostatic Painting Processes and complete Ransburg services, write Dept. AM.

Ransburg ELECTRO-COATING CORP.

Indianapolis 7, Indiana

RANSBURG

that mill running again. I'm ashamed of you, walking out at the moment you are most needed. Can't we depend upon you any more?"

"You mean you won't fire me?" asked the astonished Tom.

"Hell, no. You're more valuable than ever. A new man might bust that head out again, but you never will. I know you Tom, and I don't want you to worry about what's done. Get back on the job and have that engine ready to run by noon. We can hold the heat."

The superintendent was right, for Tom never had another accident right up to his retirement.

George P Pearce
Albuquerque, NM

PATENT PAY

What rights does a man have to an idea, or device worked out in the shop on company time? Is it his own, or does the employer have prior claim?

OF ALL THE THICK HEADS! I cannot understand what kind of reasoning our friend Al uses to think that Larson should be entitled to obtain a patent for something he made on company time and using its material and machines.

When an employee makes something on company time—and many is the time I have been guilty of doing it when the boss wasn't looking—the company has a right to claim that property. I'm not a lawyer by any means but I do possess a sense of what is right. If the truth were known three companies could lay claim to a pair of parallels I made up over a period of almost 40 years and there they repose glistening brilliantly in my inactive toolbox! What an interesting court case that would make if they chose to possess their share of them.

In Larson's case in particular,

"Seems to me, we could have moved those big gears together instead of using the little ones to fill up the gap."

AIR engineering at work
REPORT No. 4400.05

Running Ten Nuts at a Crack...

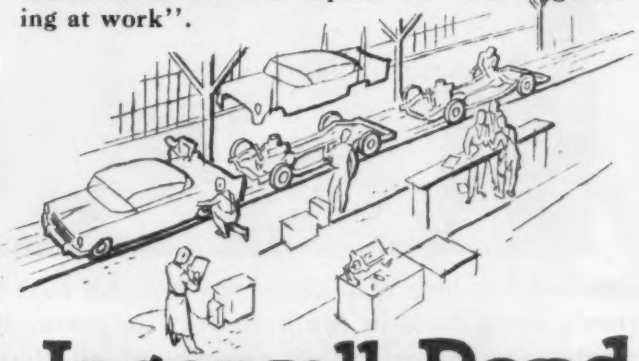
SAVES $12,000 *a year!*

This large auto manufacturer formerly used two ¼ ton presses to position a differential carrier in the rear axle housing. Then the ten ⅜" nuts were run individually. Only experienced operators could control torque so that it met specifications. Naturally the engineers wanted to eliminate the press operation and improve torque control.

AIR engineering by Ingersoll-Rand provided the answer and saved $12,000 a year. A 10-Spindle Multiple Nut Runner is now suspended over the moving conveyor. The differential carrier is hand set on the housing, and dropped to within ⅛" of its final location. The 10-spindle nut runner quickly and accurately draws it into final position as it runs all 10 nuts at once . . . and to the required 50 ft. lbs. torque. The press operation is eliminated, and simultaneous running of the nuts eliminates binding.

If you are in any way responsible for cutting costs in your plant, write us on your company letterhead, and we will arrange for you to see I-R's confidential manual of reports on "AIR engineering at work".

Ingersoll-Rand Multiple Nut Runner runs 10 nuts at once, all to exact torque.



Ingersoll-Rand

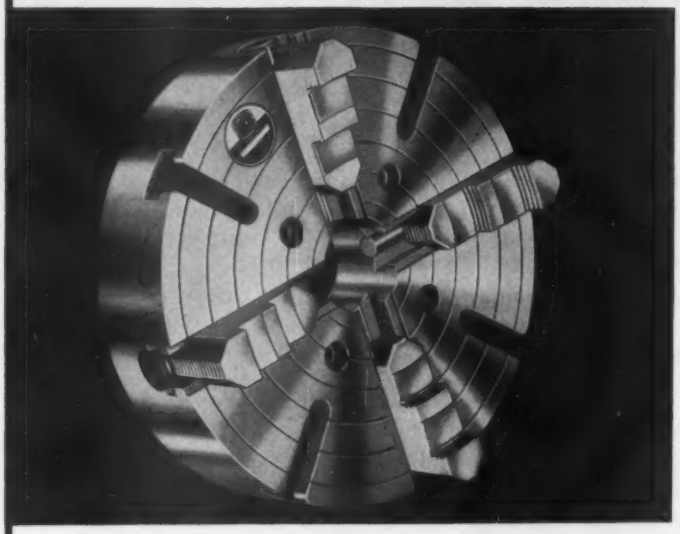
11 Broadway, New York 4, N.Y.

AIR engineering Manual

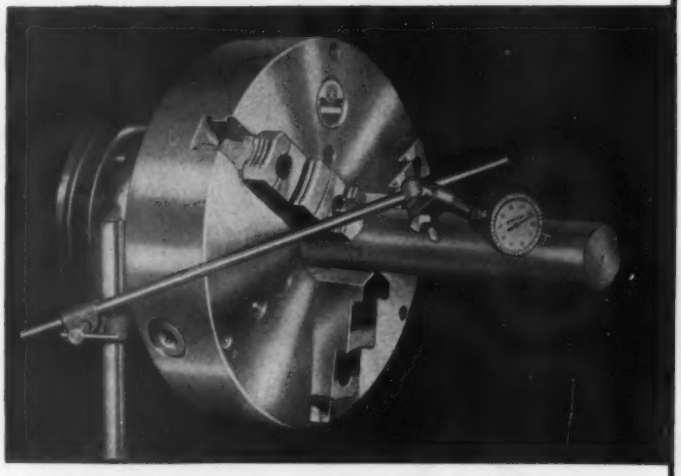
Don't miss over 100 interesting case history applications of AIR engineering in this confidential manual.

8-147

HORTON QUALITY FIRST



FOR LASTING ACCURACY!



Maintained accuracy of a chuck can only be *built in*. Horton's extra built-in features cost no more, but guarantee the longer lasting accuracy of all Horton Chucks. Let your Horton distributor demonstrate *how* Horton's five extra features make Horton Chucks stay accurate longer.

HORTON CHUCK Since 1851

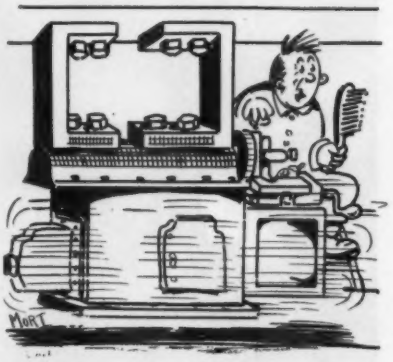
WINDSOR LOCKS, CONN.

wherein he made up a new die feed, had he not been awarded a prize for his suggestion on the same thing, he would still have no claim to the idea —that is, protective claim such as the ownership of a patent on it. The fact that he offered it as a suggestion and it was accepted makes it doubly certain that no court of law would award him a decision were it brought to trial.

Where Larson slipped up was that he developed the idea on company time whereas had he done the work at home or elsewhere he would have a chance of ownership. If he had made up the gadget on his own and then showed it to the firm before he took out a patent on it there is a chance that he would have had the idea stolen from him. Someone will come along now and say business men don't resort to such tricks, but don't fool yourself—there are still some unscrupulous ones among us who would pry loose your false teeth if they thought they could get away with it. While they don't go around in slouch hats and spiked whiskers anymore, there are some who make it a habit of jumping claims.

If the gadget proved such a money-saver, it would be to the company's interest in encouraging future ideas of money-making values by making certain that the originator of the idea was sufficiently rewarded. I don't mean by any stinking $3 or $5 award, but a substantial one sufficient to take the sting out of the loss of complete ownership.

It takes money to take out a patent and it takes a hell of a lot of it to keep on top when such things as lawsuits are brought in to fight the claims. A small man is up against it when it comes to taking out patents on an idea; were the company to offer patent service through its



"The production department is always hollering 'Keep the work moving' so I bolted the ram to the ceiling and now they ought to be satisfied; the work sure moves!"

Proven producer

SURVEY

DESCRIPTION OF WORK:
Surfacing 24" square steel plates

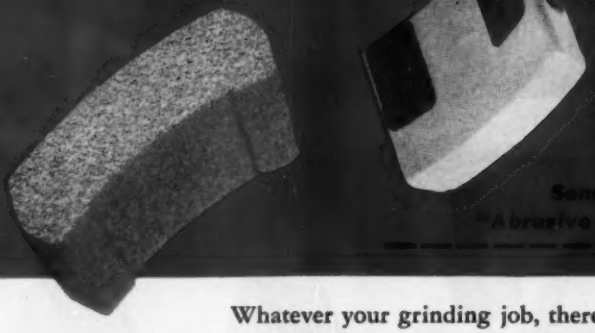
SEGMENTS:
Simonds NA36-J16-V (open structure)

PERFORMANCE:
Gave fast, free-cutting action with long segment life. Eliminated excessive dressing

INCREASED PRODUCTION 15%.

SIMONDS ABRASIVE CO.

abrasive segments



Send for catalog bulletin "Abrasive Segments" form ESA-188

Whatever your grinding job, there's a Simonds Abrasive product to help you do it better. Free consultation with our Engineering Service may reveal "profit leaks" in your present operations.

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How Do You Buy Socket Screws?

Many buyers continue to specify some one make by *habit*. They have no particular preference for it, but they think of *all* such fasteners simply as "screws with hex sockets" — *all* makes substantially *alike*.

If you buy that way, and have never tried P-K Socket Screws, just break the habit once, and give them an actual assembly test. You'll get a pleasant surprise.

You'll find that the hex shape of the socket is about the *only* way that other makes and P-K are "alike".

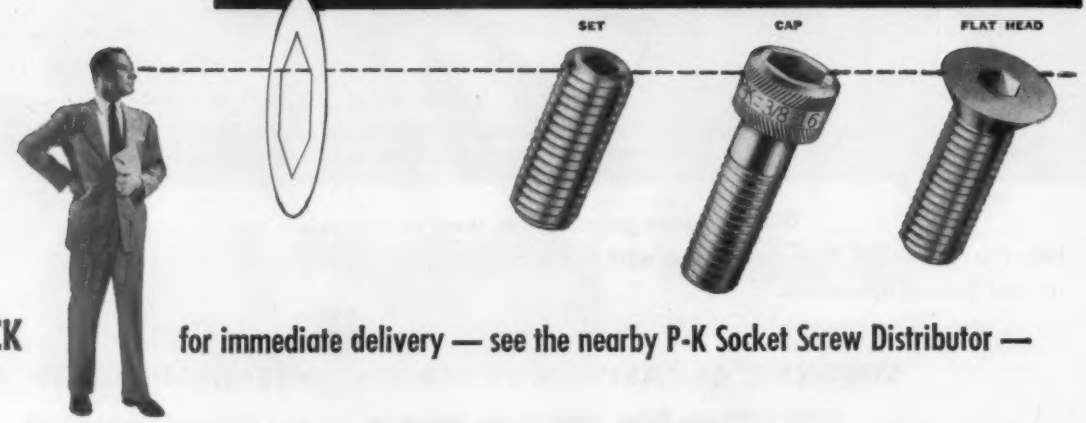
Look Beyond the Hex

It pays to *look beyond the socket* when you buy Socket Screws. Compare every detail of product and service. You'll find P-K Socket Screws take top rating in every test. You get exclusive features that simplify and speed up assembly. You get quality matched to a firm guarantee. You get planning and buying information exactly patterned to your needs.

You need *all* these essentials for cost-wise assembly. Why miss out on *any* of them? Just try P-K Socket Screws. Get samples from your P-K Distributor, or write: Parker-Kalon Division, General American Transportation Corporation, 200 Varick St., New York 14.

for all the essentials of cost-wise assembly

PARKER-KALON®



IN STOCK for immediate delivery — see the nearby P-K Socket Screw Distributor —

THE FIRST
Ground Thread
SOCKET
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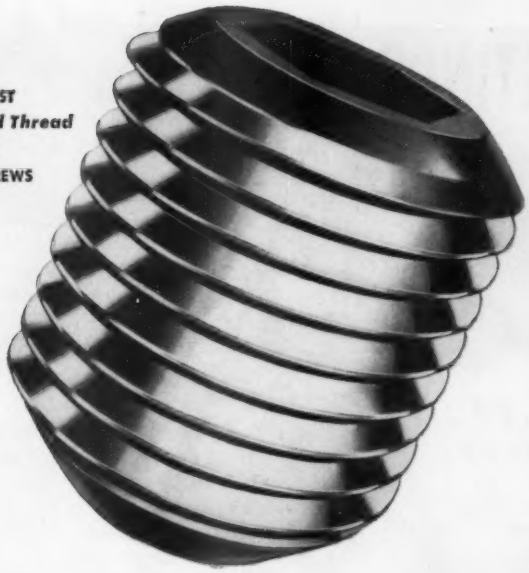

THE ONLY
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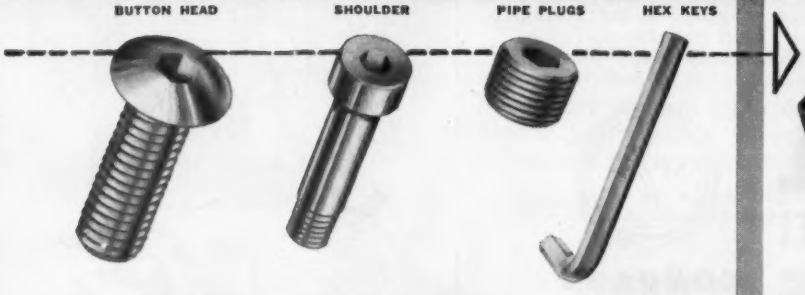
SOCKET
CAP SCREWS

SOCKET SCREWS



your local Supply and Service Specialist

In Socket Set Screws PARKER-KALON gives you

- **GROUND THREADS** — at no extra cost. Gage-like precision, mirror-smooth finish — uniform, dependable Class 3 tolerance. Mechanics like their easy starting, easy keying.
- **PROVED ASSEMBLY STRENGTH** The "proving ground" is the millions of assemblies made by thousands of satisfied users of P-K Socket Screws, whose products are used everywhere, many under the toughest conditions of vibration.

In Socket Cap Screws PARKER-KALON gives you

- **SIZE-MARK** — offered only by P-K. Incised on the head of each screw, it saves time and wasted screws when sizes get mixed up, prevents errors by green help. Maintenance and service men like Size-mark, it helps in reassembling.
- **GEAR GRIP** Meshing firmly with finger tips, it prevents slipping and fumbling when hands are oily, speeds starting.
- **MAXIMUM STRENGTH** Head, socket, and threads are accurately formed by Parker-Kalon's cold-pressure process. Steel structure "flows" to conform to all contours, assures maximum strength at points of greatest stress.

In all Socket Screws PARKER-KALON gives you

- **GUARANTEED FIRST QUALITY** Based on tests and inspections at every step in production — an exacting routine of quality control supervised by P-K laboratory Technicians.
- **FULL RANGE OF STYLES AND SIZES** You'll find any Socket Screw you need, NC or NF, in P-K's complete line, and Hex Keys in all sizes, and in several handy sets. Ask your P-K Distributor for the P-K Price List, Catalog, — any information you need. Slide chart Socket Screw Dimension Finder Free.

PEARLITIC MALLEABLE CASTINGS

when operating conditions . . .

. . . are severe

If service conditions are unusually rugged and you're troubled by high manufacturing costs—look to pearlitic malleable castings!

Pearlitic malleable has high fluidity that casts easily into complicated shapes. It resists wear under heavy loads at high speeds . . . has high ultimate strength . . . possesses excellent non-seizing properties for bearing surfaces . . . can be given a very smooth finish where desired . . . and can be either liquid quenched or air quenched. And perhaps *most important of all, pearlitic malleable machinability index ranges from 80 to 90* (B1112 steel = 100).

So look your product over critically. Then check pearlitic malleable castings. They can replace more expensive methods of fabrication or manufacture . . . can lead to reduced weight, less machining time . . . fewer assembly operations . . . *greater sales appeal for your product.* AA-166

NATIONAL MALLEABLE AND STEEL CASTINGS COMPANY
Cleveland 6, Ohio

The Nation's largest independent producer of malleable and pearlitic malleable

patent attorney, I would think it would encourage its employees to greater effort in developing their power of analysis which, in turn, reverts back to company benefit.

It is obvious that the ideas created should be something entirely out of the company line and in the event that an employee's idea becomes successful the company should be reimbursed in the form of attorney's fee. This would make the burden of both lighter.

Harrison Mitchell
Topeka, Kansas

THERE ISN'T very much doubt as to the eventual ownership of the patent on Larson's die feed in the case mentioned. The patent, when issued, will belong to the company. The question of ownership on matters of that type has been pretty well established by many legal decisions which have established what the lawyers love to call—Precedents.

There was a period many years ago when employees' ideas were, in many cases, exploited by the employers. At the same time, experience has taught me that there are just as many cases where the employer's time, money, shop facilities, and materials were used to exploit the employee's ideas. Patent laws are a specialized branch of legal procedure and are very little understood by anyone except those who deal with them continually. In the main, patent laws and decisions are fair to both sides.

For many years, many employers have required engineers, draftsmen, and designers to make a general assignment of their future patent rights over to the company. This assignment was a condition of employment. I have signed many of these assignments and have considered them fair. The employer paid me a salary

"No, no, Bronson . . . You stand inside the 'safety zone' lines!"

OK alternate angle cutters

slab-mill tough chrome-nickel-moly prop blades at Curtiss-Wright

JOB DATA

FEED *8.25 inches per minute*

SPEED *30 revolutions per minute*

DEPTH OF CUT *from 0.055 to 0.10 inches*

LENGTH OF CUT *123 inches*

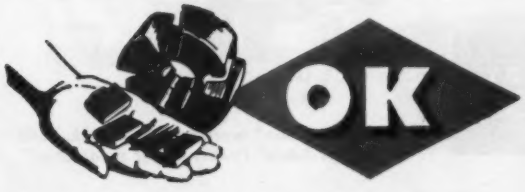
STEEL *Chrome-Nickel-Molybdenum alloy*

CUTTERS *16 mounted 8 and 8 for straddle milling*

Climb-milling the taper on 25 x 123 x .800" chrome-nickel-molybdenum steel plates for the famous hollow-steel propeller blades used on big B-36 International Bombers is regarded as one of the more rugged metal-cutting assignments at the Curtiss-Wright Caldwell plant.

For this second operation, 16 OK alternate angle cutters straddle the center rib of the blade, 8 and 8, are mounted on a 75 hp planer-type miller. The taper extends 123" increasing from 0.055 to 0.10". The cutters are standard OK alternate angle mills with overlapping high speed steel blades. The angular set gives a shearing action, coiling and turning the chips away from the cut. Streamline in design, OK cutters are free from pins, screws, gibs and locks. They pack huskier blades for heavy cuts and more blades per body for finishing cuts. Blades are secured by a driving fit. Mated serrations in body and blades prevent any lateral movement and provide a fine scale adjustment to compensate for wear.

A copy of the OK catalog 13, "Modern Milling Cutters for Modern Milling Machines" is yours on request.

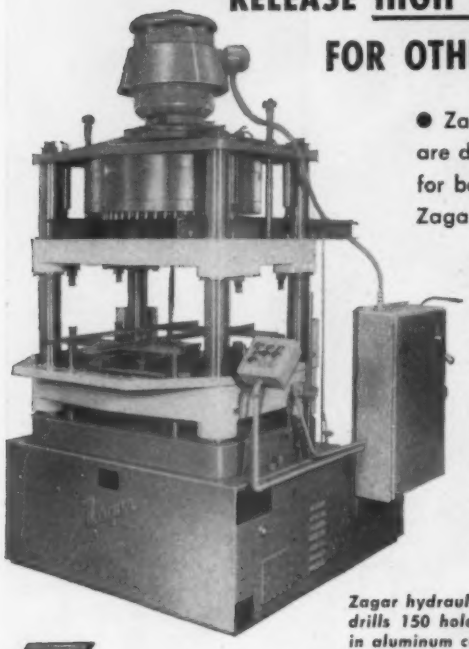


modern milling cutters for modern milling machines

THE OK TOOL COMPANY, INC., Milford, New Hampshire

Zagar 4-POST RAM TYPE DRILLING MACHINES

RELEASE HIGH COST DRILL PRESSES FOR OTHER IMPORTANT JOBS

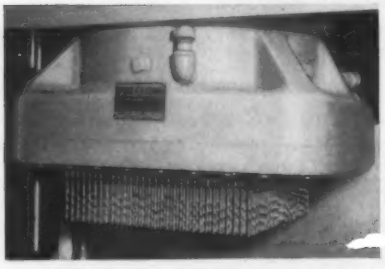


● Zagar hydraulic drilling machines are designed for high speed drilling—for both production and limited runs. Zagar 4-post machines reduce high cost tooling, and handle a range of work that ordinarily necessitates the use of *several different machines*. Very important, Zagar drilling machines release capital equipment for other purposes. Zagar 4-post machines lower your capital investment. They quickly pay out. What, sir, are your production requirements?

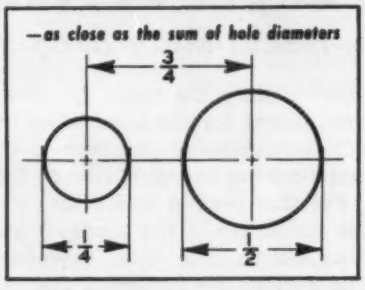
Zagar hydraulic ram-type 4-post machine drills 150 holes, 1/4" through 5/8" dia., in aluminum casting at one pass.

Zagar GEARLESS DRILL HEADS

are the answer to close-center drilling on your own equipment



1000 spindles, drilling simultaneously, are possible with Zagar gearless drill heads. Any pattern drilling any machinable material is standard practice; any size up to 1½" dia. . . . Zagar can design the tooling for the entire drilling job; or, a Zagar gearless drill head can be used on your existing drill press. Zagar engineering is flexible enough to recommend and supply the answer that will cost the least and produce the most.



★ ★ ★

Ask for Zagar Catalog "A-1".

ZAGAR TOOL, INC.

24000 LAKELAND BLVD. • CLEVELAND 23, OHIO

Zagar TOOLS FOR INDUSTRY and SPECIAL MACHINERY

which continued when I was sick, and put me to work on material, machines, processes, and operations which were waiting for me to improve. Now if I do work out an improvement or create a new idea with company materials on company time, just how can I logically kid myself into believing that the idea is my personal property? The courts have consistently ruled for the employers in cases such as that.

The time always comes when an engineer who is working, let us say, on the improvement of lathes, comes up with an idea for a new attachment. Instead of turning this idea over to the company, he patents it by himself and tries to exploit it in his spare time. The company sues him to recover, claiming, and rightly, and they were paying the man to develop just that type of thing, and that he did develop it on time he was paid for. In the long run, the company recovers. However, if that engineer quits the company, waits several years and then applies for a patent, the matter of proof as to just where the idea was developed becomes difficult to prove, and in case of a suit, the engineer might win if he has money enough to continue the fight.

The cases we have mentioned refer only to salaried personnel whose business it is to devise and create new products and to perfect improvements of existing products and processes. None of what has been said applies to the man in the shop who works for day wages.

In the past, employers have compelled hourly-rated men working in shops to sign patent assignments, too. The courts look at these cases in a very different manner. They have ruled that the average man in the shop cannot be forced to sign away something he doesn't own, and something that may never exist—

"Twenty hours overtime this week, and what's for lunch? Peanut butter sandwiches!"

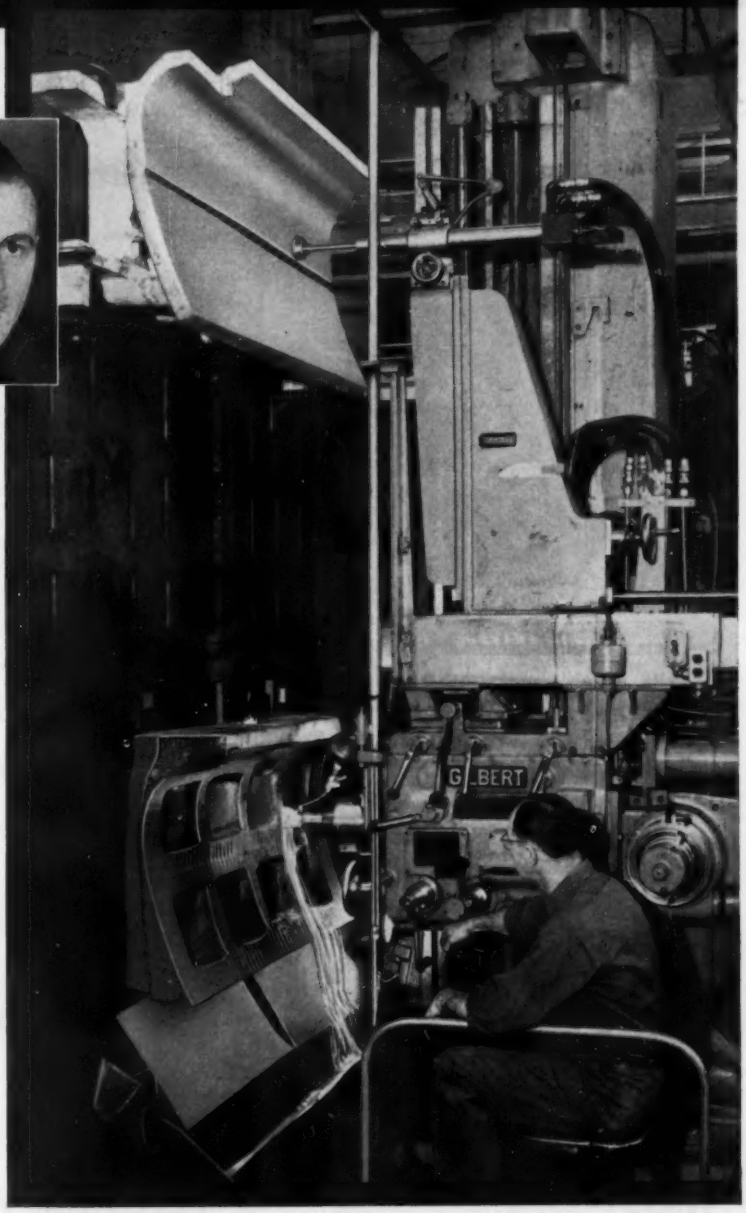
Plant engineer talks Turchan . . .

Gentlemen!

"Our recently installed Turchan Hydraulic Follower has given us a low investment duplicator, capable of doing close tolerance contouring. It has proven to be trouble free and simple to operate. The Turchan Follower lends itself to quick and easy conversion from a duplicator to a mill.

Today we are doing a wide variety of contour milling faster, less expensively and equal to any other type of duplicating available."

Very truly yours,
MONARCH PRODUCTS CO.
T. Gelemey
Plant Engineer



No human being can duplicate the exceptionally fast and accurate reproduction of a Turchan Follower Attachment.

Small machines or large can be equipped to handle work and the limitations . . . of production or precision . . . depend entirely upon the capacity of the machine involved . . . Finish can be greatly improved and shop capacity can be greatly increased.

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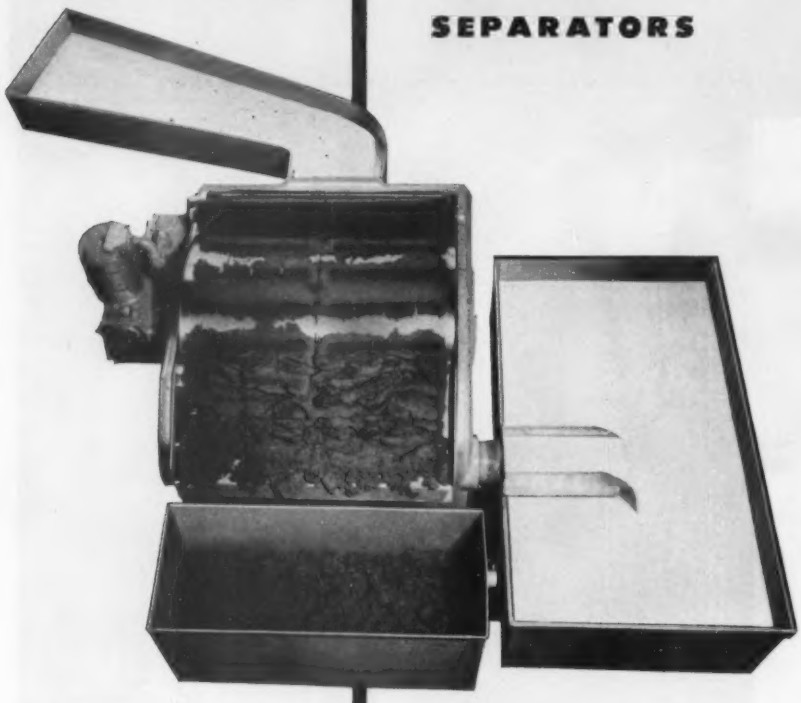

give you these features for

Practical
COOLANT
CLEANING

✻ AUTOMATIC — The Separator requires no attention other than periodic emptying of the sludge pan.

INTENSE MAGNETIC POWER — coolant flow is restricted to intense magnetic field so that more ferrous material, entrained abrasives and other foreign matter is removed per minute per gallon than by any other method.

DOUBLE CLEANING ACTION — magnetized particles form a fan-shaped pattern on the surface of the magnetic drum which serves to "comb out" free abrasive or other materials as the drum rotates.

RAPID SEPARATION — coolant is processed rapidly, flowing by gravity through the separator, for effective circulation at all times. No additional coolant supply necessary to compensate for the cleaning operation.

See your BarnesdriL representative or write for Catalog 3004.

BarnesdriL Automatic Coolant Separators remove swarf, sludge and abrasive particles automatically from soluble and oil coolants. Built in ten sizes — 1½, 3, 5, 10, 20, 30, 70, 100, 280 and 350 gallons per minute capacity.

COOLANT BARNESDRIL CLEANING

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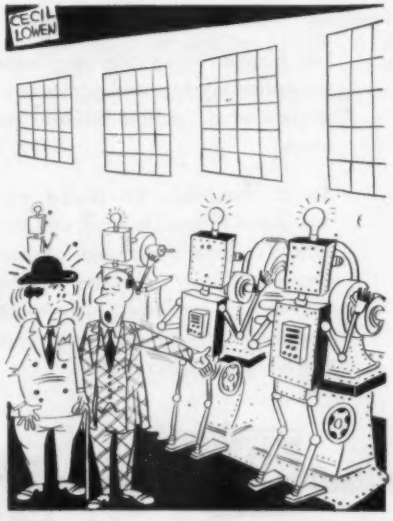
his future possible creations and inventions. Those assignments have mostly been thrown out of court, and I think rightly so.

But when a man like Larson rigs up a new die feed on company time, with company materials on company machines, that new device incontestably belongs to the employer if the said employer wishes to assert his rights. Many companies encourage those ideas by a suggestion system, and pay for them. In my book, and in the legal book, Larson has been paid for his suggestion and the matter is closed.

Over the years, patent decisions and judicial rulings have established precedents which tend to favor the individual and not the employer. Thus if a man uses his employer's facilities to create a new device which he patents himself he might be able in a legal contest to hold on to his patent, always providing he has not signed a previous assignment agreeing to turn those ideas over to his employer. In any case, the courts would probably hold that the employer has earned a shop right to that device and can use it in his own shops without the payment of a royalty, but he would not have the right to manufacture it for resale.

Thirty years ago when I was studying patent law in college, the lawyer teaching us made the statement that when anyone bought himself a patent, he also bought himself a one-way ticket to a lawsuit. That statement still holds true. Patents are expensive to procure, and contrary to general opinion, the majority of them are not worth the money they cost. The few patents that have value for some reason or another gen-



"The union called a strike. YOU were on vacation — it was this or close th' plant, Mr Warren!"

Scully-Jones precision built Arbors and Adapters save costs two ways!

STYLE "B" ARBORS provide rigid setups, permit close-coupling of dual overarm supports with cutters. Variety of standard sizes, from ⅞" to 2½" diameter, with 40 and 50 NMTB standard tapers.
HIGH PRECISION SOLID SPACING COLLARS available in six bore sizes . . . widths from .001" to 6".
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ADJUSTABLE SPACING COLLARS for quick and easy adjustment between cutters . . . save setup time.

For fast, accurate milling at lower cost, it pays to use Scully-Jones *precision built* Arbors!

You save tool life because your cutters always run true, each tooth taking its share of the load. Arbor and pilot diameters are held to +.0000", −.0005". Faces of spacers and sleeves are ground and lapped parallel within .0002". Taper shanks are ground to a finish of from 10 to 20 micro-inches, RMS, and are individually checked on light gages to assure a perfect fit in the spindle.

You save tooling costs, too, because Scully-Jones Arbors are made to take a lot of punishment. Manufactured from steel forgings, they're tough on the inside to provide maximum strength and minimize vibration . . . hard on the outside to resist nicking and wear.

Call your factory-trained Scully-Jones representative or distributor for fast service on milling arbors, adapters, sleeves, and spacing collars . . . as well as other Scully-Jones "Precision Holding" Tools.

When you buy or *build* a machine tool, make sure it's equipped with Scully-Jones "Precision Holding" Tools.

Let your factory-trained Scully-Jones representative or distributor help you select the right tool for the job.

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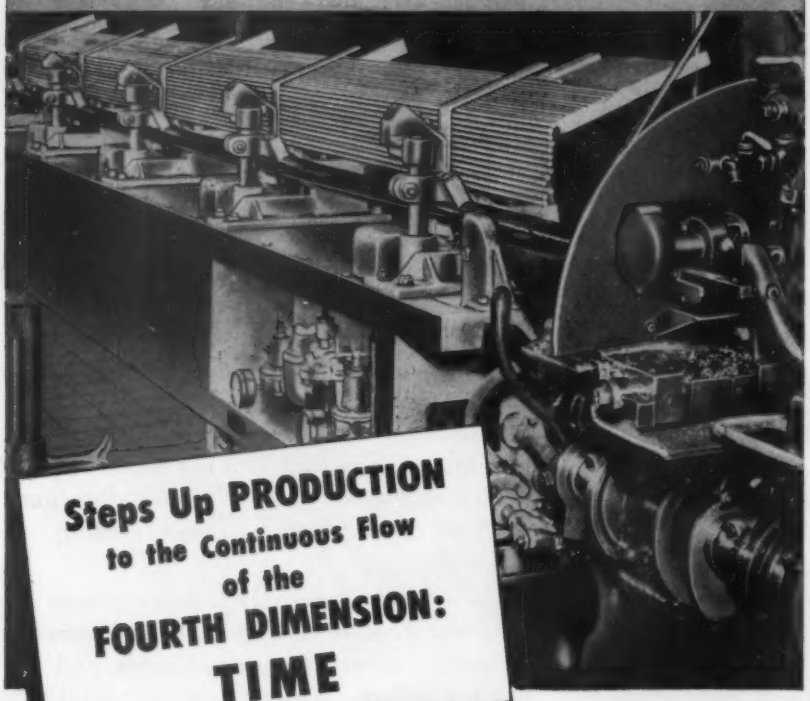
"Precision Holding" for holding precision

Floating Holders · Adjustable Adapters · Safe-Torque Tap Drivers · Milling Machine Adapters · Close-Center Tap Drivers · Quick-Change Chucks · Heavy-Duty Tap Drivers · Drill and Tap Drivers · Recessing Tools

Now... A Screw-Machine-Feed that BREAKS THE TIME BARRIER!



Steps Up PRODUCTION to the Continuous Flow of the FOURTH DIMENSION: TIME

EVERY TIME a screw machine cuts air... every time feed fingers are adjusted or replaced... every time remnant removal forces a shut-down — *that's time lost forever, never again to be made up in the production quota!*

In the modern Lipe Automatic Magazine-Loading Bar Feed, we present a continuous-feed mechanism that utilizes *every minute* of the working day for production...and still more production.

There's *No* cutting air. *No* feed fingers. *No* remnant problem. *No* minimum or maximum run. *No* limit on length of feed. *No* selective stock length requirement.

There IS a definite increase in production — up to 100% on some installations — *at least 30% on every one!*

Send today for FREE BOOKLET giving full details on Lipe's AML Bar Feed — today's big advancement in screw machine stock feeding. We will also supply name of your nearest distributor.

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Manufacturers of Automotive Clutches and Machine Tools
Syracuse 1, N. Y.

erally infringe on one or more existing patents, and require expensive lawsuits to adjudicate them. By the time they are settled, they are outmoded, so why bother? In my book, patents are a necessary protection to large companies with large pocketbooks, but are very expensive hobbies for small folks.

There is an opinion prevalent among shop men that a patent, any patent, is a one-way ticket to a fortune; there is a corollary to that opinion that the cost of a patent is minor,—say $150. Those opinions are fostered by hope, and kept alive by advertising patent lawyers. Definitely, patents, good patents, are not cheap. The patent office fees are rather modest, but the search that has to be made, the drawings and models that must be prepared, and the papers that must be drawn up cost, and keep on costing.

At this time, I have a friend, a shop man, who had an idea for a trailer hitch that he considered a world beater. Today, and this is three years after he started for his patent, he has invested over $1100 in his idea, is no closer to a patent than he was when he started, and faces the fact that the trailer manufacturers have made changes which obsoleted his idea, and the idea itself wasn't so hot in the first place. And that is a common story about patents. The average company-secured patent probably costs at least $3000, and probably will never pay for itself. Under those circumstances, I don't think Larson would want to pay for a patent for his die feed, and until the company got its patent, I wouldn't expect them to pension him off.

James K Matter
Detroit, Mich

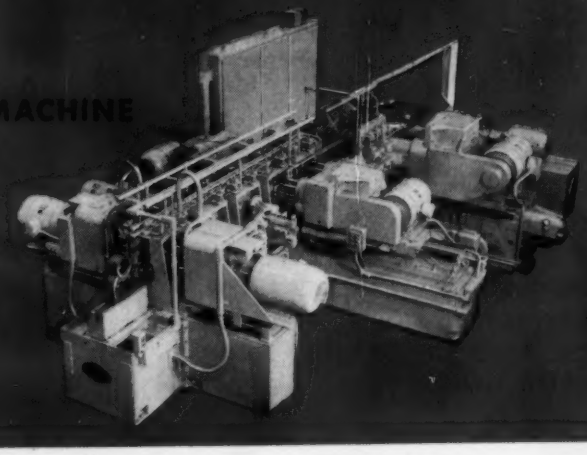
"These aren't good for work. Show me something practical with nice, French heels!"

10 Station Automatic In-Line TRANSFER MACHINE

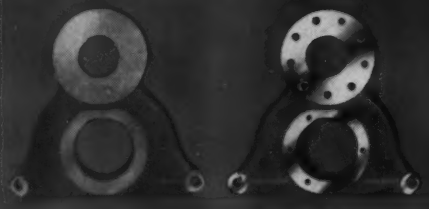
BAKER

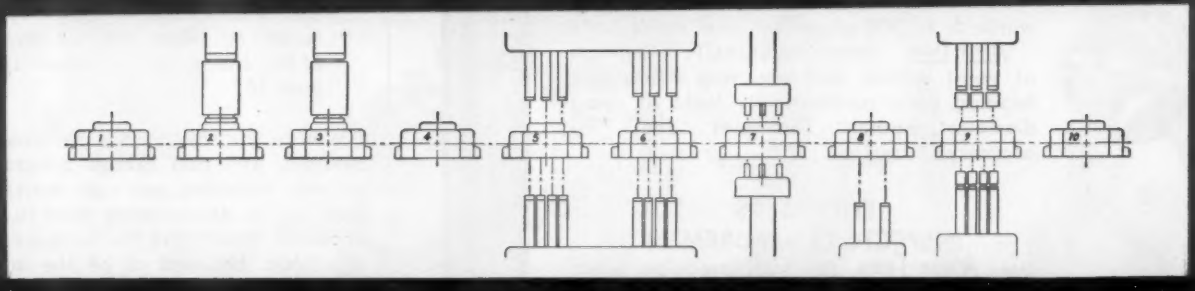
Performs Multiple Operations on Tractor Housings

THE MACHINE



THE PART





THE OPERATIONS

STATION NO. 1
LOAD 1 PART

STATION NO. 2
UNIT NO. 1
COMB. SEMI. FIN. BORE 5.165 & 3.249 & 2.861 DIAS.
COMB. SEMI. FIN. BORE 4.425 THRU BOTH WALLS

STATION NO. 3
UNIT NO. 1
COMB. FIN. BORE 5.180 & 3.264 & 2.876 DIAS.
COMB. FIN. BORE 4.440 THRU BOTH WALLS

STATION NO. 4
IDLE

STATION NO. 5
UNIT NO. 2 "U" DRILL 5 HOLES
31/64 DRILL 6 HOLES

UNIT NO. 3 31/64 DRILL 8 HOLES
21/32 DRILL 1 HOLE
"U" DRILL 6 HOLES
23/32 DRILL 1 HOLE

STATION NO. 6
UNIT NO. 2 ½ CHAMFER 5 HOLES
⅝ CHAMFER 6 HOLES

UNIT NO. 3 ⅝ CHAMFER 7 HOLES
13/16 CHAMFER 1 HOLE
½ CHAMFER 6 HOLES
23/32 DRILL 1 HOLE
COMB. COUNTERBORE
.796 & CHAMFER 1 HOLE

STATION NO. 7
INSPECTION

STATION NO. 8
UNIT NO. 4
.6910 REAM 1 HOLE
.8157 COUNTERBORE 1 HOLE

STATION NO. 9
UNIT NO. 5 7/16-14 N.C. TAP 5 HOLES
9/16-12 N.C. TAP 6 HOLES

UNIT NO. 6 7/16-14 N.C. TAP 6 HOLES
9/16-12 N.C. TAP 7 HOLES
½-14 N.P.T. TAP 2 HOLES

STATION NO. 10
UNLOAD 1 PART

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A NEW OUTSTANDING METHOD IN THE FIELD OF GAGING SMALL DIAMETER HOLES

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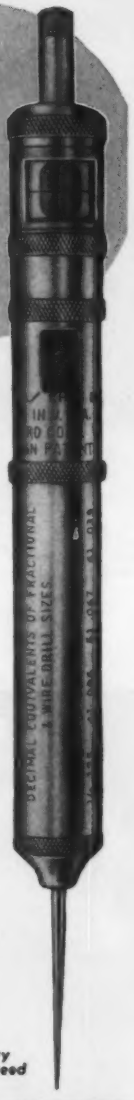

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within 5/10,000 of an inch over entire scale KWIK-CHEK gives you QUALITY CONTROL of small drilling and punching operations. Reading scale automatically locks at exact diameter reading. Eliminates "feel" inaccuracy.

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Use KWIK-CHEK for high precision work, fast accurate inspections and labor saving methods.

Here's how easy it is to use KWIK-CHEK

① Release clutch, needle snaps into place.

② Insert needle into hole being calibrated.

③ Slide barrel down until flush.

④ Remove gage and read magnified scale.

Factory Guaranteed

$110.00
Set of 3
Includes leather covered case for 3 gages and precision steel setting gage

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are available in 3 models
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#30 Range .130" to .255"
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Includes leather covered case and precision steel setting gage

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New Books

KAISER ALUMINUM ROD, BAR AND WIRE — *Published by Kaiser Aluminum & Chemical Sales, Inc, 919 N Michigan Ave, Chicago, Ill. 160 pages. Price $2; free when requested on company letterhead.*

Designed to assist in selection and use of the most suitable aluminum rod, bar, and wire for different applications, the book includes both basic data on alloys and information on applications, fabrication, and finishing. Chapters are included on machining, forming, joining, and finishing.

All aluminum alloys are indicated by the new four-digit index system (*AM*—Sept 13, '54, p187) adopted in October, with the old commercial designations included in many cases for comparison.

•

CONTRACT TERMINATION GUIDE—*Published by Dep't of Manufacture, Chamber of Commerce of the US, Washington 6, DC. Paper cover. 60 pages 8½×11. Price $1.00. Discounts for quantities over 10.*

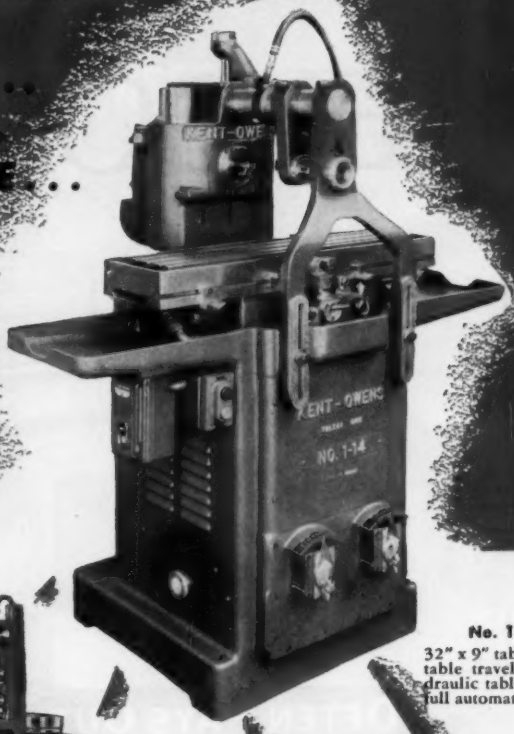
If you're working on a government contract, and that fateful telegram arrives, notifying you of contract termination, do you know what to do about it? You'll find the answers in this book, believed to be the only interpretation of current settlement procedures available to manufacturers.

S ripped of the gobbledegook of official language, it is a reliable guide through the mass of confusion and inconsistencies of government contract termination settlement. It takes the reader, step by step, through the termination process of either prime or sub-contracts and, prcperly used, should produce big savings in time and work. It is perhaps the best headache-powder the Chamber has ever produced.

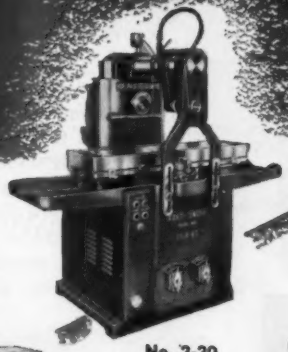
Chapters deal with initiating termination action, steps preliminary to submitting claims, disposition of termination inventory, and settlement procedures. It does not cover "Termination for Default" because there is no uniform Government policy for handling such terminations, nor does it discuss pre-termination planning—a matter which each individual company should take into consideration when formulating its own

EXTRA RUGGED... SPEEDY... ACCURATE...

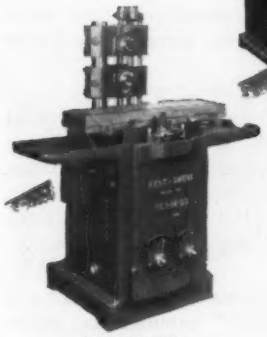
to Bring Down Milling Costs!



No. 1-14
32" x 9" table ... 14" table travel ... hydraulic table feed ... full automatic cycle.



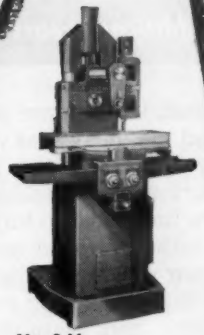
No. 2-20
20" table travel... 42" x 12" table.. fully automatic hydraulic table feed.



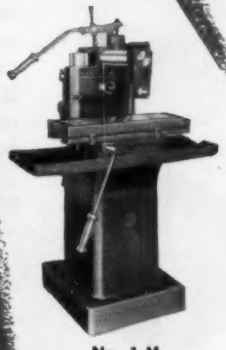
No. 1-14DS
Double Spindle for two milling operations at same time ... 14" table travel ... 32" x 9" table.

No. 2-20DS
Double Spindle for two milling operations at same time... 20" table travel ... 42" x 12" table.

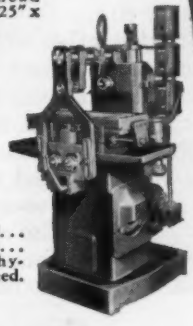
No. 2-20V
20" table travel... vertical spindle with speed range 32 to 1284 R.P.M. ... 42" x 12" table.



No. 1-V
Hydraulic vertical head feed ... 5½" head travel ... 25" x 9" table.



No. 1-M
Hand feed to table and head ...25" x 9" table ... Adjustable head counterbalance.



No. 1-8
8" table travel... 25" x 9" table... automatic hydraulic table feed.

STEP UP SPEED and ACCURACY!

Put the work on Kent-Owens Machines for top-speed milling and topmost accuracy to keep your costs at a minimum! Advanced features throughout these rugged machines make the difference . . . greater dependability . . . accuracy maintained in meeting tough production schedules. Twin-post head mounting assures balanced load. Greater cutting efficiency—only two gear contacts, motor to spindle. Write for bulletin #754 on wide range of hydraulic and hand-operated machines. Also, let Kent-Owens design and build your tooling and special machines. Kent-Owens Machine Co., Toledo, O.

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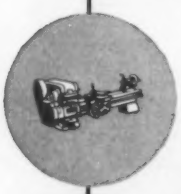

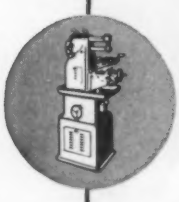

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FLAMMABLE LIQUID TRADE NAME INDEX — *Published by National Fire Protection Ass'n, 60 Batterymarch St, Boston 10, Mass. Paper cover. 80 pages 4¾ × 7¼. Price $1.25.*

Anyone concerned with handling, storage, and fire-protection problems of liquids will welcome this pamphlet. More than 2400 flammable liquid trade names are listed in alphabetical order, together with their flash points, a brief mention of their principal use, and the name of the manufacturer.

NICKEL IN IRON AND STEEL—*By A M Hall, chief, alloy development div, Batelle Memorial Institute. Published by John Wiley & Sons, Inc, 440 Fourth Ave, New York 16, NY. 595 pages. Price $10.*

This is the second in the "Alloys of Iron Research" monograph series prepared by The Engineering Foundation. The first dealt with aluminum; the third will deal with titanium.

Purpose of the present volume is to review and correlate all important published data on the use of nickel as an alloying element in iron and steel. This is a monumental task and the resulting volume gives every evidence of doing justice to it.

A total of 784 publications were selected after several years of research. These are listed in the bibliography. The book itself consolidates these sources into an orderly presentation of data, with copious references to source material.

Most of the volume naturally deals with basically metallurgical data. Starting with data on the occurrence and refining of nickel, it covers the properties, metallography, heat-treatment, and fabricating characteristics of nickel in wrought steel, cast steel, and cast iron.

The sections dealing with machinability, welding, heat-treatment, and other aspects of the working and fabricating are excellent summaries of basic data.

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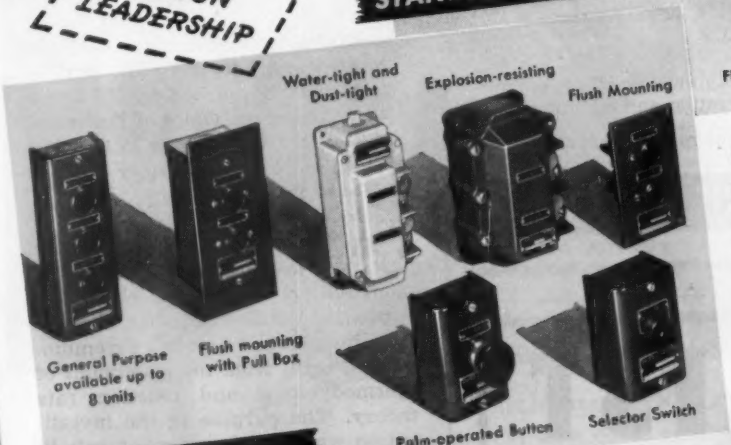

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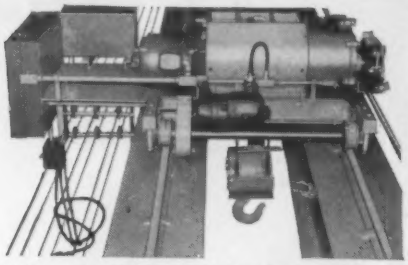

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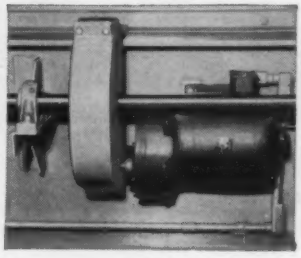

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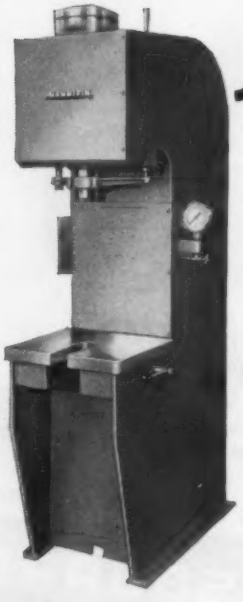

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ITALIAN-ENGLISH TECHNICAL DICTIONARY (5TH EDITION)—*Edited by Dott Ing Giorgio Marolli. Published by Felice Le Monnier Editore, Florence, Italy. 1075 pages, 5¾ × 8½ in. Price 7500 lire ($12).*

Some 90,000 technical terms are translated from Italian to English, or vice versa, in this new edition, and American spellings are used. There are some 35 charts of basic machines from various industries, identifying parts in both languages, and some 36 conversion tables. Words are accented and divided by the International Phonetic System.

•

CHROMIUM ELECTROPLATING — *Compiled and edited by Dr. Arthur A Burr. Published by US Dep't of Commerce, Office of Technical Services, Washington 25 DC. 160 pages, 8×10½, paper cover. Price $5.*

A lengthy and highly technical report of an investigation into the fundamental principles of chromium deposition, and evaluation of the conditions existing in chromium plating baths from the standpoint of thermodynamic and reaction rate theory. The purpose of the investigation was to seek improvements in plate quality and deposition.

The main portion of the report is devoted to the theory and experiments involved. Some investigations of an incidental and supplementary nature are included in an appendix.

•

NICKEL-BASE-ELECTRODE SPECIFICATIONS — *Pamphlet published jointly by the American Welding Society, 29 W 39 St, New York, and the American Society for Testing Materials, 1916 Race St, Philadelphia. Twelve pages, 6×9 in. Price 25 cents.*

Nickel and nickel-base covered electrodes, the subject of this tentative specification, are used for corrosion and heat-resisting applications. The twelve classifications of filler metal include nickel, Monel, K Monel. Inconel and Inconel X, as well as various Hastelloy alloys. The specifications provide chemical analyses and standard tests, plus an appendix to aid selection of the most suitable filler metal for specific needs.

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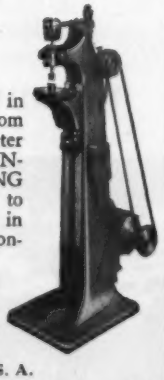

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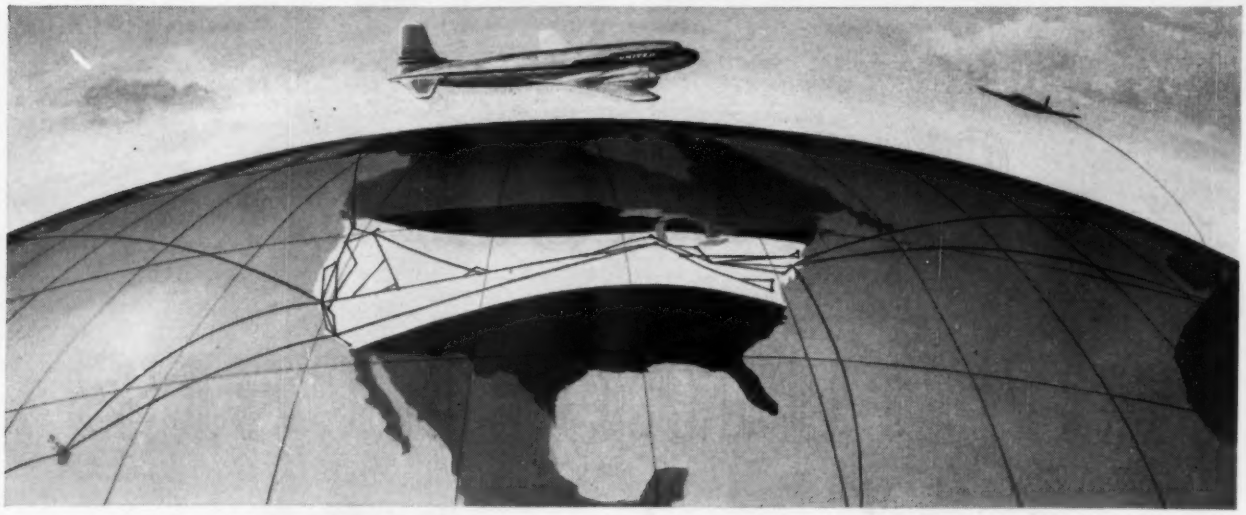

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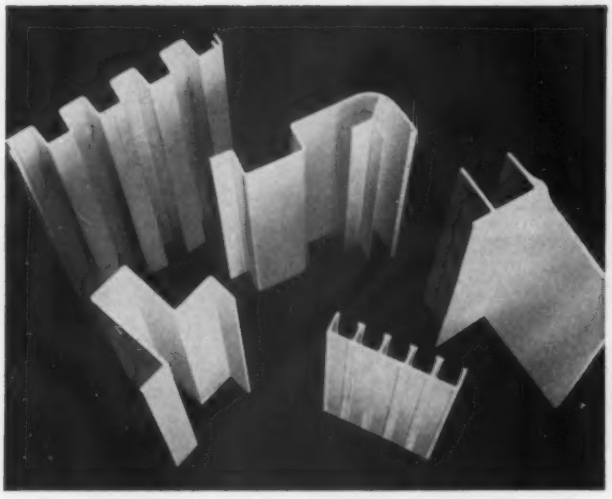

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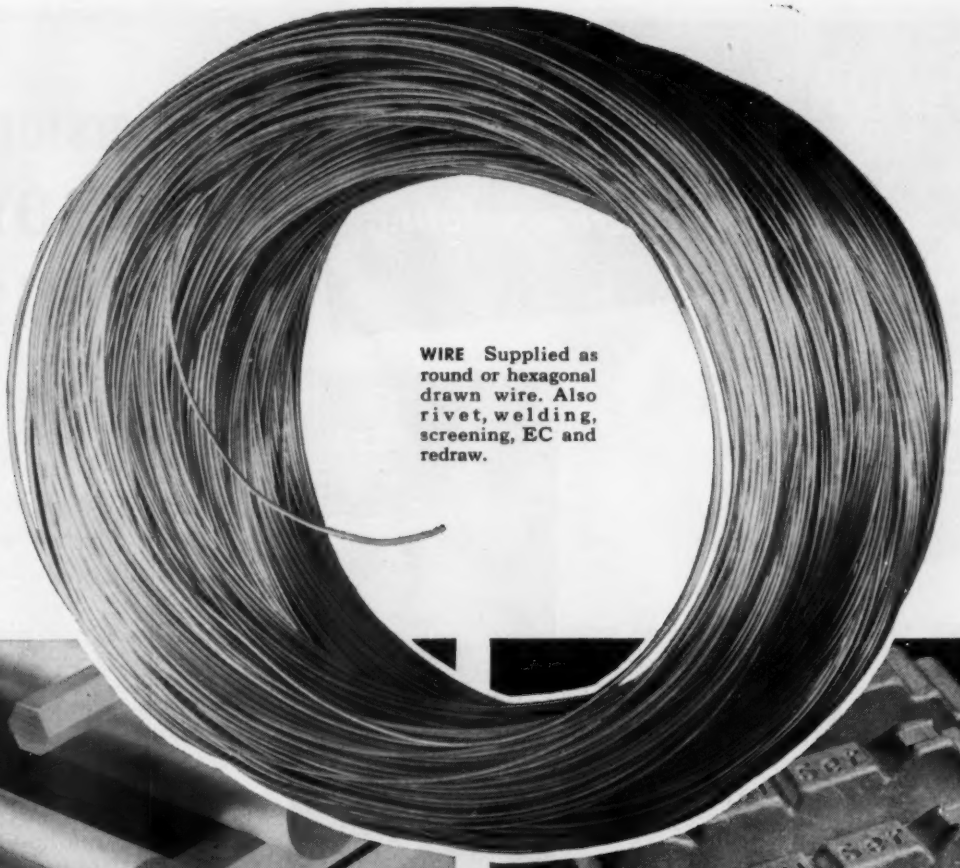

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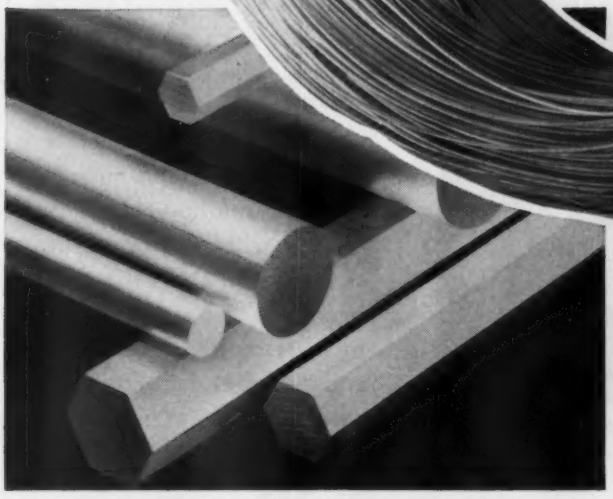

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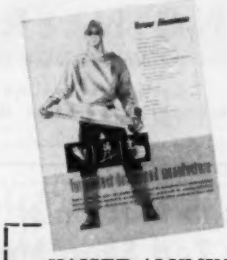

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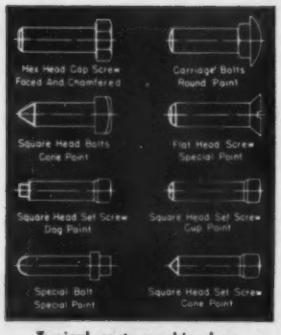
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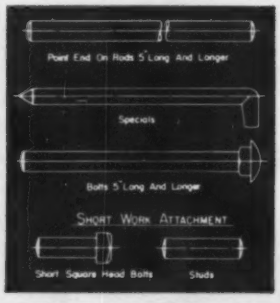
Typical parts machined on the TYPE 4600



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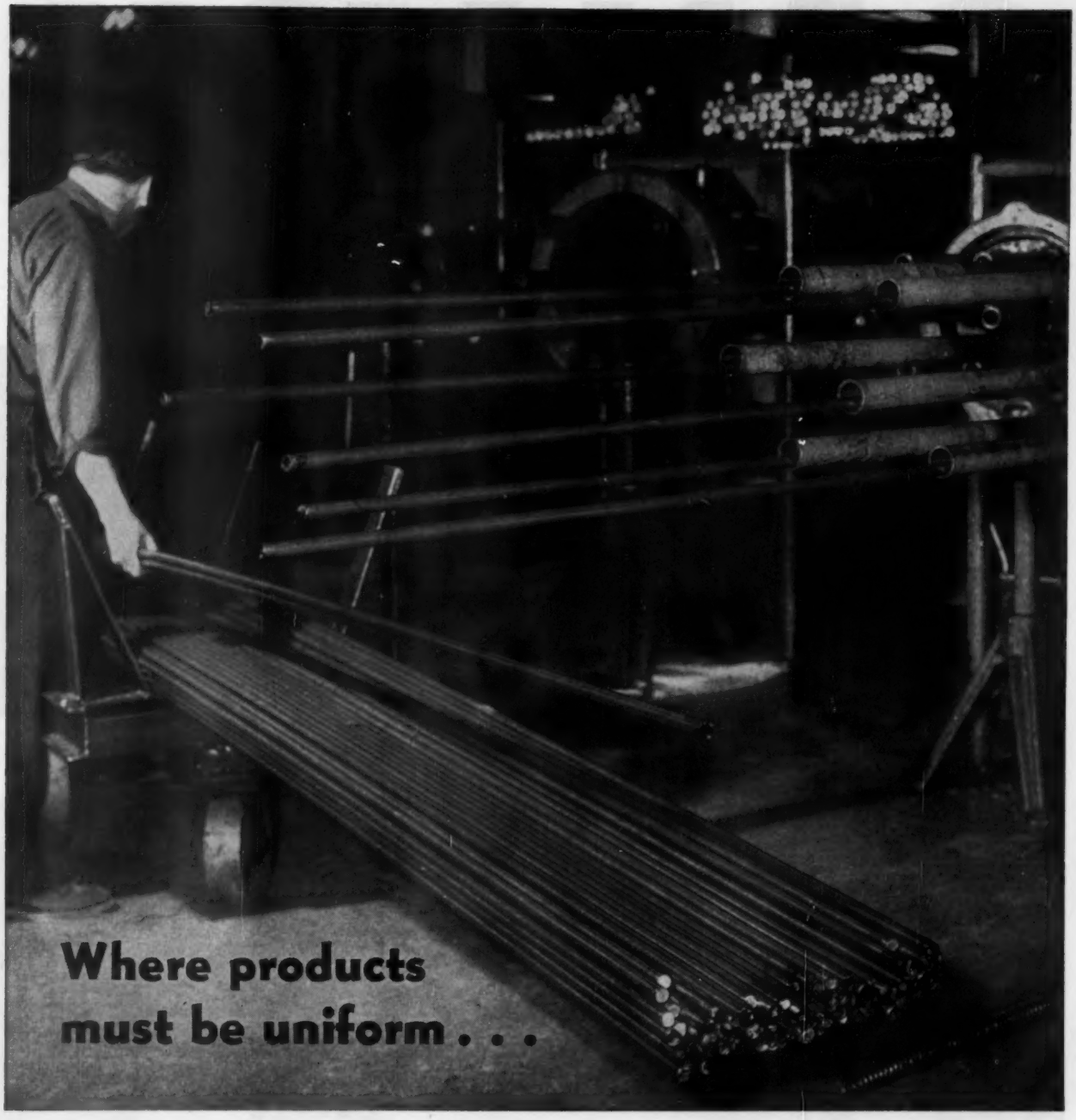

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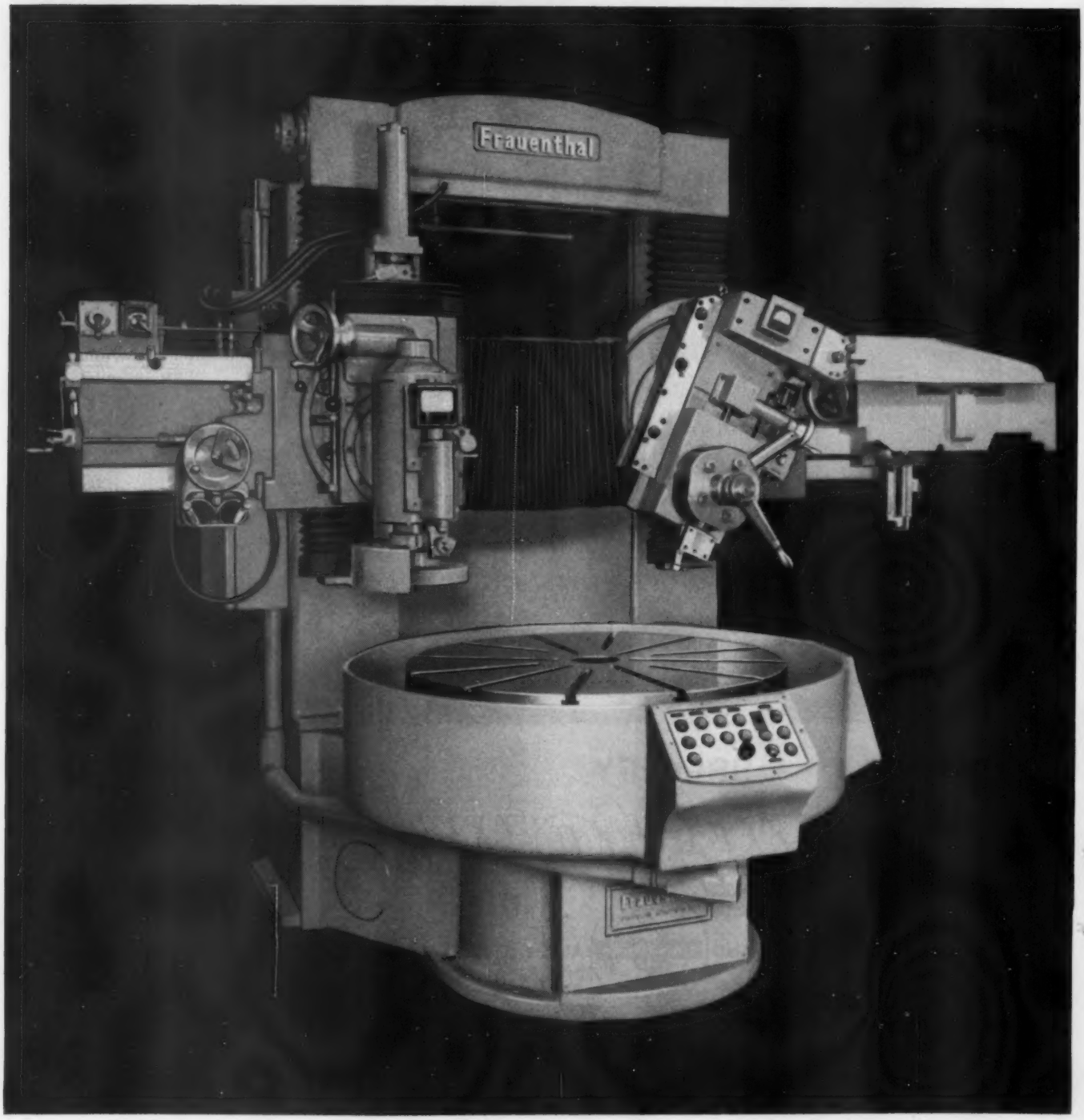

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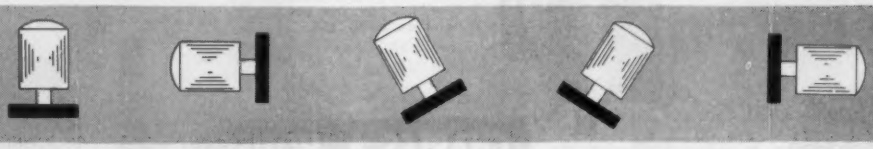

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STANDARD MILLING CUTTERS

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ON INVENTORY • *Same size blades, for cutting steel, cast iron or non-ferrous, fit cutter bodies of all sizes in all series.*

ON GRINDING • *Blades are supplied sharpened, ready for use, may be re-sharpened in or out of the body, to a gage.*

WAITING for DELIVERY • *All series 2500 cutters 5" to 16" dia. and all blades carried in stock for immediate delivery.*

Whether you buy one or several sizes, you always save with E-CON-O-MILL. Proved savings in the cost of diamond wheels alone have caused many shops, both large and small, to standardize on E-CON-O-MILL • But, foremost, they're efficient cutters of truly one-piece rigidity • Get the whole story on this great development in standard tooling by writing for our E-CON-O-MILL catalog

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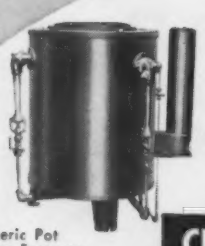
NO BLOWER OR OTHER POWER NEEDED

JUST CONNECT TO GAS SUPPLY



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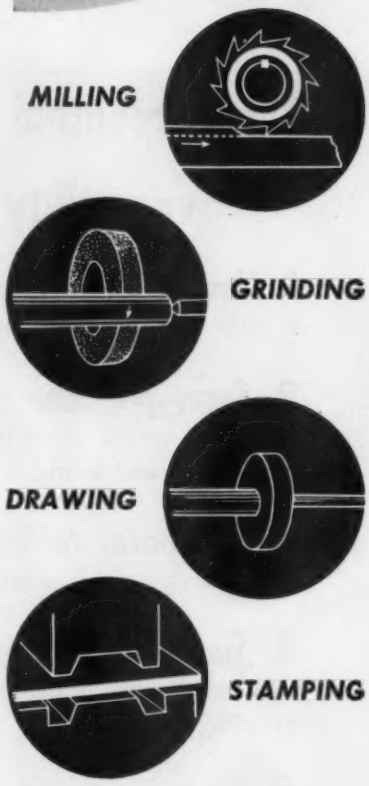

Take up your lubricant problem with Hans C. Bick and discover how you can reduce costs through increased production and longer life for tools, dies, and abrasives. Bick lubricants and coolants are modern compounds developed by specialists with 23 years' experience. To assure best results, our engineering service is always available to work with you in a friendly, cooperative way. If you machine, form, or grind ferrous and non-ferrous metals, call upon Hans C. Bick now to smooth the way for lower unit costs.

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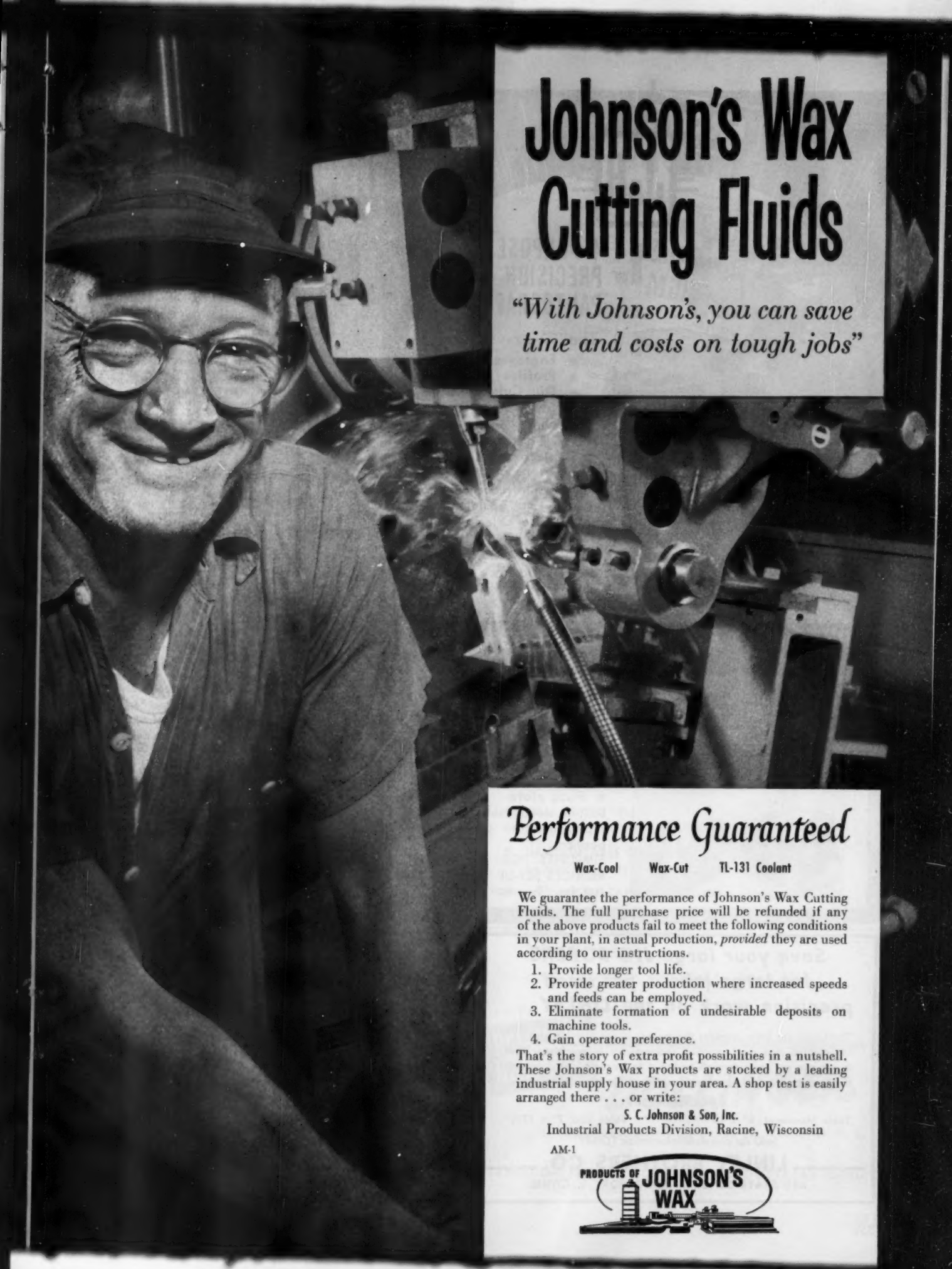

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AM-1

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- Profiles
- Die Cuts
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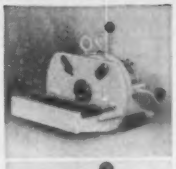

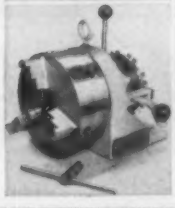

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For positive positioning of workpiece or jig, on:

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Built-in station selector assures rapid, accurate predetermined positions.
SIMPLIFIES JIGS.
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The Linley Jig Borer provides the means . . . at very low cost . . . of handling your most exacting requirements in precision. With it you can cut costs through having a tool exactly fitted to your small work . . . save your larger machines for larger work.

Specifications

Table Movement: 6" x 10" Table Size: 7" x 17½"

Send for complete information TODAY!

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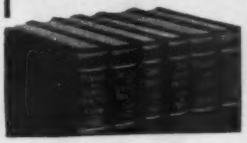
Now! Take home MORE PAY... step into a better job!



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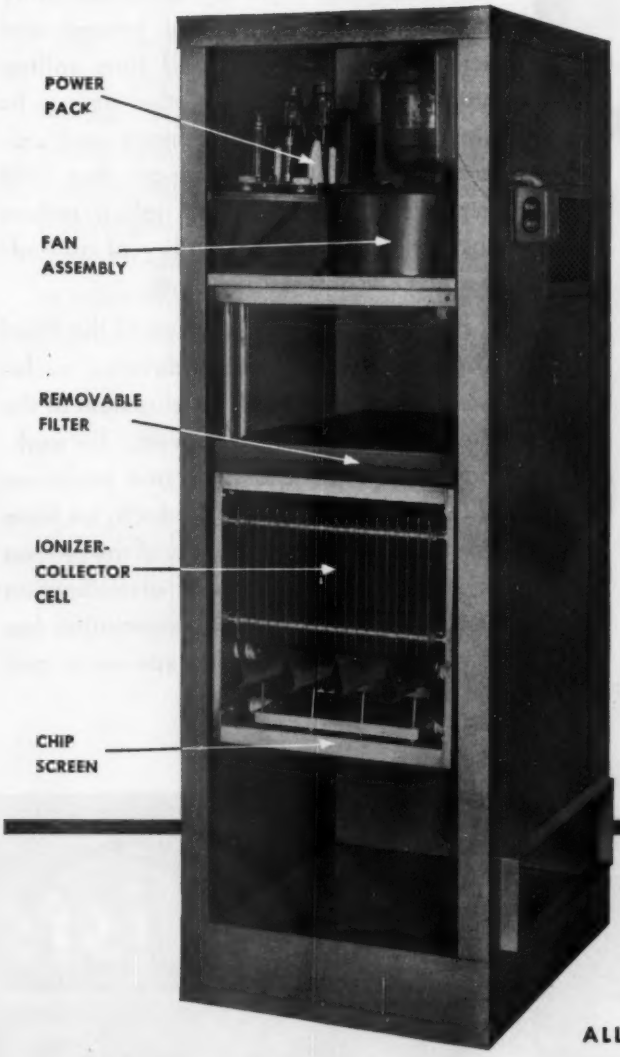
Loss To Industry Estimated In Millions
Oil mist . . . that fine, almost invisible haze that floats around machine shops and metal working plants is costing industry millions of dollars annually.
The dollar loss isn't in wasted oil. Rather, it takes the form of lost man hours through sickness, high maintenance expense for removal of sticky residue from plant walls, floors and ceilings, and increased heating costs when exhausted outside the plant.

ELIMINATES OIL MIST AND SMOKE AT THE SOURCE!



A self-contained, "packaged" ventilating system for individual machine tools

Electro-Staynew Mist Collectors are specifically designed to be mounted on or near high speed machine tools. These Dollinger-engineered, electrostatic filters draw contaminated air from around grinding or cutting operations, *remove* over 90% of the oil mist and smoke, and then return clean air to the shop. Look at these exclusive advantages:

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For complete information, write today for Bulletin 420.

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35 YEARS *Special* in THREAD

At the present time, it is estimated that approximately 70% of all external threads in the United States are produced by rolling, and the use of the process is constantly increasing. There is more interest and activity in the thread and form rolling process now than at any other time in its history. The savings, accuracy and uniform quality and the strength that cold forging adds to the parts rolled reduce costs and improve the quality of an endless number of threaded parts.

For over 35 years the efforts of the Reed Organization have been devoted exclusively to the study and development of the thread and form rolling process. By working closely with designers and producers of formed and threaded products, we have assisted in expanding the use of the process to its present high level of diversification and precision. This long association has resulted in a wealth of experience and

Thread and Form Rolling
Specialists
THREAD ROLLING MACHINERY

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As specialists in this field, Reed offers you a complete thread and form rolling service. We suggest that you submit your thread and form rolling problems to our threading engineers for study and application recommendations. Our experimental rolling department is also at your disposal to assist in developing special thread and form rolling applications.

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Six different Sizes of threaded stainless steel parts rolled with one attachment . . . .
THREAD ROLLING SAVES critical MATERIAL
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Let Reed Research and Experience Help You
The Aircraft Industry selects the THREAD ROLLING PROCESS . . .
Every Thread Precision Formed . . . to Specifications
1. $48,000 saved by roll threading with Reed Attachment
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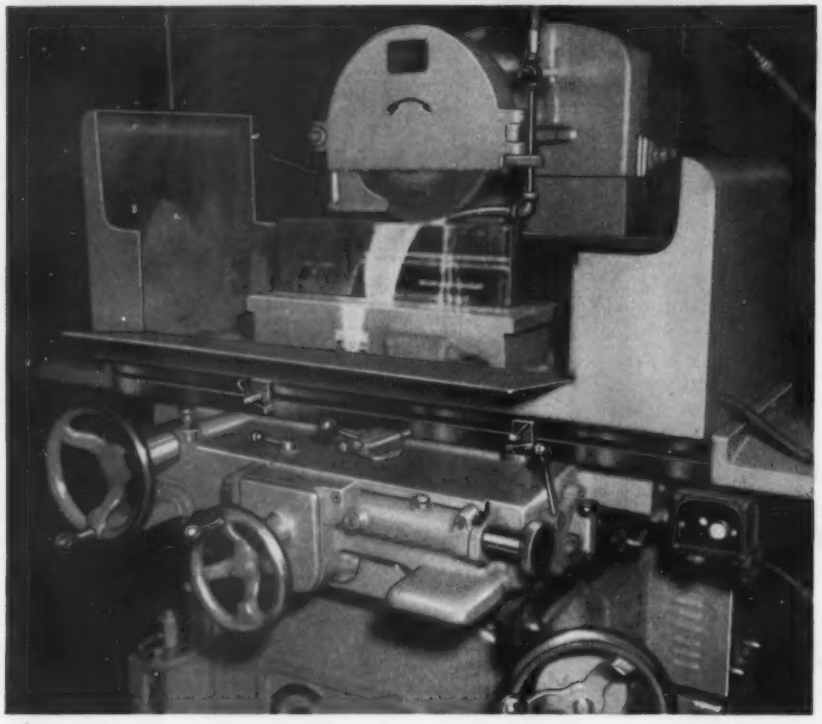
"Finish and Accuracy Beyond Expectancy"



COVEL No. 60
HYDRAULIC SURFACE GRINDER
Proves

VERSATILITY...
ACCURACY...
EFFICIENCY...

on a wide variety of jobs for Sargent Specialties & Machine Co.

Finish grinding sides of male section of embossing die made by Sargent Specialties & Machine Co., Muskegon, Michigan. Die is one of many used for fabricating decorative component parts for various appliances.

Greater capacity within a minimum floor space is just one of the outstanding reasons why management and operators of Sargent Specialties & Machine Co. are sold on the performance of the Covel No. 60 Surface Grinder. Ease of operation, powered elevation, built-in-precision and automatic lubrication plus its all-around efficiency is proving day in and day out to be ideal for the wide variety of production and tool room grinding requirements of this Muskegon, Michigan, machine company.

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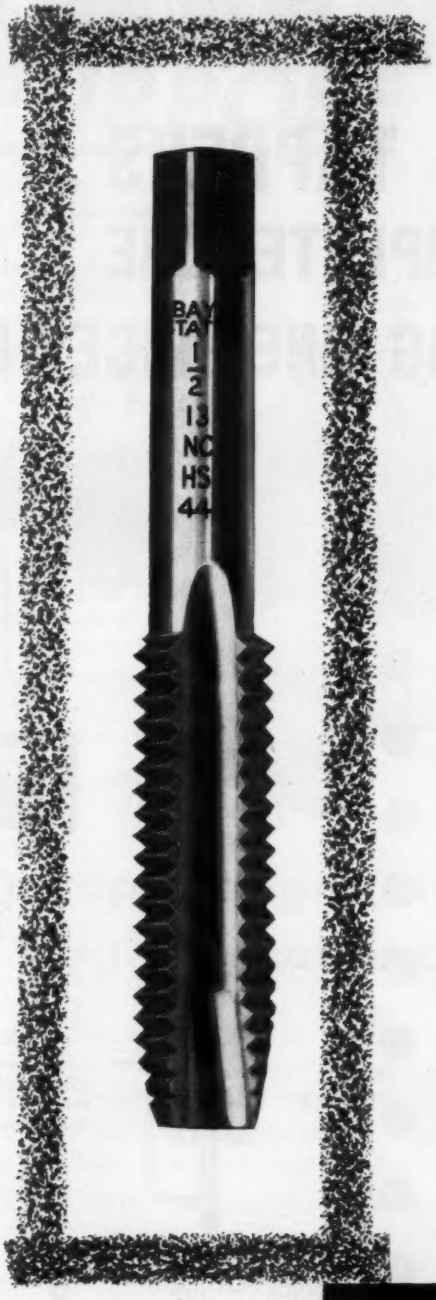
COVEL HYDRAULIC SURFACE GRINDERS

	(No. 20)	(No. 35)	(No. 60)
Work Capacity	6" x 18" x 12"	8" x 24" x 11"	15" x 24" x 18"
Grinding Wheel	10" x ¾" x 3"	12" x ¾" x 3"	14" x 1" x 3"
Spindle Motor, H.P.	1½	2	3

COVEL PRECISION GRINDERS | **BENTON HARBOR MICHIGAN**

DRILL GRINDERS • UNIVERSAL CUTTER & TOOL GRINDERS • HYDRAULIC & HAND FEED SURFACE GRINDERS



Taps for production . . . .
in all standard and special
sizes . . . are available from
your nearby Bay State Tap
distributor. Gain precision
performance on every
tapping job with controlled
contour taps, made by
BAY STATE TAP & DIE CO.
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BAY STATE TAPS

TAPS FOR PRODUCTION . . .

ERRINGTON TAPPERS . . .
the COMPLETE LINE . . .
the LEADING LINE SINCE 1891

FRICTION
For blind holes, tapping in steel, copper, etc. wherever there is danger of breaking taps.

Errington specializes in the manufacture of high speed multiple drilling and tapping attachments. The name Errington is your assurance of top-quality products . . . your assurance of the finest and most modern tools to produce first-grade workmanship at minimum operating costs.

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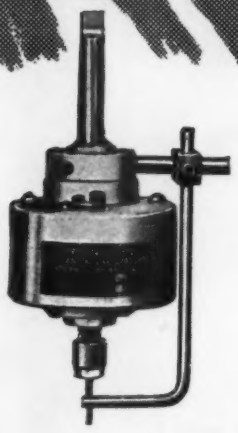
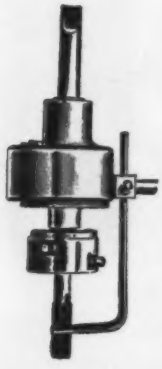
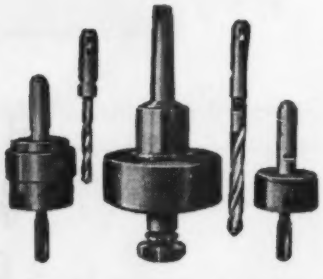


BALL BEARING CONE-DRIVE
Designed for Ball Bearing High Speed Drill Press.



POSITIVE
For through holes where work is drilled and then re-handled and tapped.



QUICK-CHANGE
Tool-Holders to Drill, Tap and Set Studs, etc., without moving work, or stopping or reversing machine. Individual friction adjustment in each tap-holder, if required.

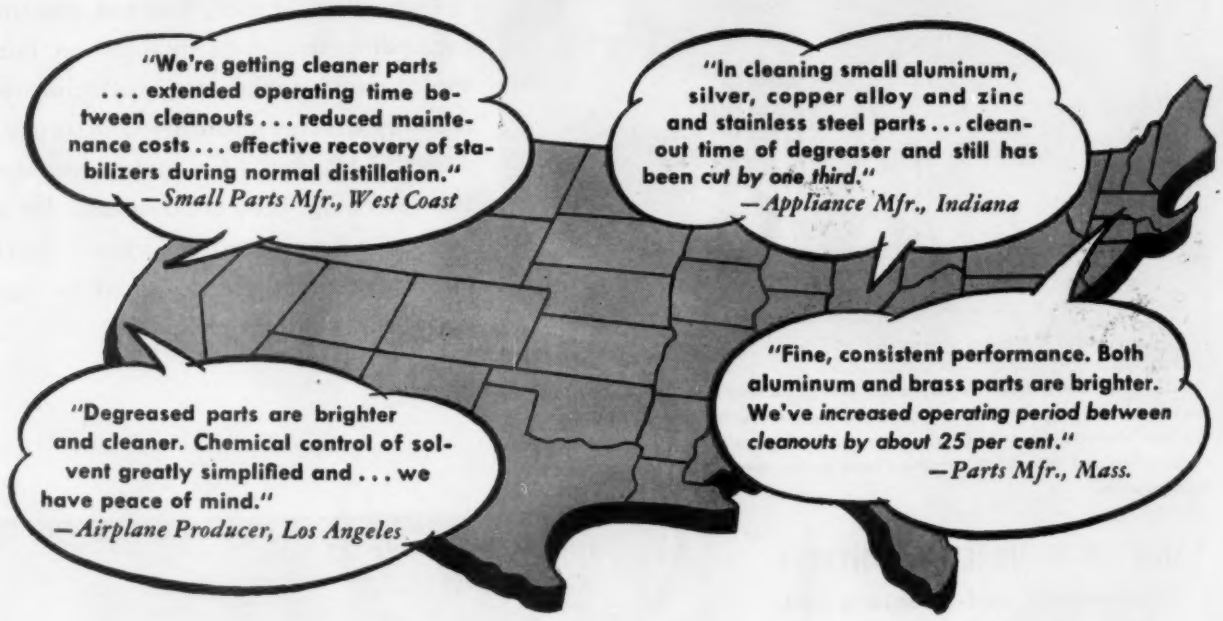
These Tappers may also be adapted for button or acorn die threading.

ERRINGTON **MECHANICAL LABORATORY, Inc.**
Established 1891
Main Office and Plant: **STATEN ISLAND 4, NEW YORK**

Here's what they're saying about

ALL-PURPOSE TRICLENE® D

(Trichlorethylene)


"We're getting cleaner parts . . . extended operating time between cleanouts . . . reduced maintenance costs . . . effective recovery of stabilizers during normal distillation."
—Small Parts Mfr., West Coast
"In cleaning small aluminum, silver, copper alloy and zinc and stainless steel parts . . . clean-out time of degreaser and still has been cut by one third."
—Appliance Mfr., Indiana
"Fine, consistent performance. Both aluminum and brass parts are brighter. We've increased operating period between cleanouts by about 25 per cent."
—Parts Mfr., Mass.
"Degreased parts are brighter and cleaner. Chemical control of solvent greatly simplified and . . . we have peace of mind."
—Airplane Producer, Los Angeles

Du Pont's vapor degreasing solvent gives you brighter, better cleaning of all metals

Check these extras

EXTRA DURABILITY. *New* "Triclene" D has unsurpassed resistance to *all* major causes of solvent breakdown—heat, light, air, light metal chlorides, and acidic materials. It retains its original ruggedness even after repeated use and distillation.

EXTRA OPERATING ECONOMY. You get safe, thorough cleaning with *new* "Triclene" D. Rejects are not a problem . . . cleanouts are quicker and easier.

EXTRA CONVENIENCE. *New* "Triclene" D is truly ALL-PURPOSE—built to give you dependable performance in *any* degreasing job. Just *one* brand of solvent to buy for any type degreaser . . . for any class work.

All these extras add up to the finest solvent ever produced for vapor degreasing—new, all-purpose "Triclene" D. Let us tell you more about it. Just fill out and mail coupon below.

New All-Purpose

"TRICLENE" D

Trichlorethylene

DU PONT

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Electrochemicals Department, Wilmington 98, Del.

☐ Please send me your descriptive folder on new, all-purpose "TRICLENE" D.

☐ Please have your representative call with the details.

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Address _____

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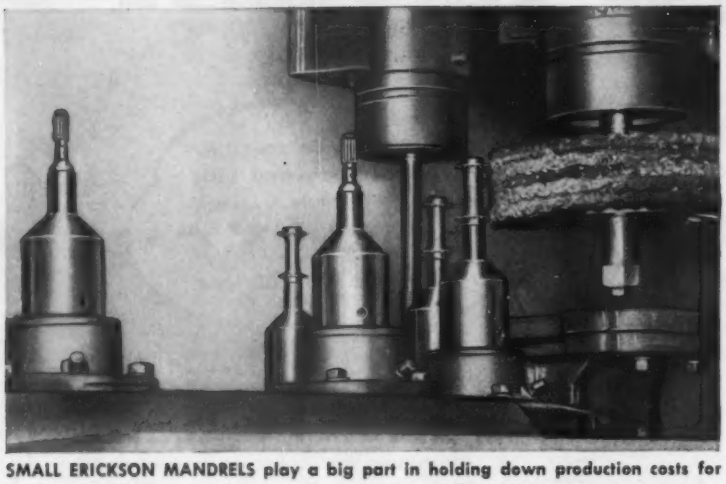
Self-release, greater grip, automatic alignment of ERICKSON MANDRELS speed small to large part loading



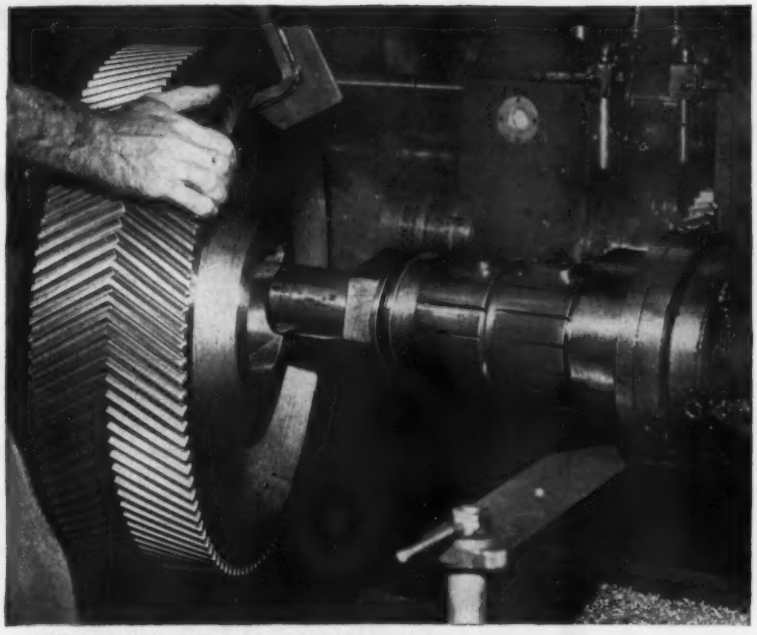
SMALL ERICKSON MANDRELS play a big part in holding down production costs for leading bicycle parts manufacturer. Here you can see how Erickson drawbar-operated, precision expanding mandrels speed wheel hub loading for buffing operation. Ease of operation and instantaneous release have greatly speeded this quantity production holding problem.

Regardless of size, Erickson precision expanding mandrels operate on Erickson's famous double-angle principle that not only assures guaranteed accuracy of .0005" T I R, but also makes mandrels self-releasing. They are available for air, hydraulic or manual operation. Special mandrel sleeves are designed to match various internal forms. AA-72

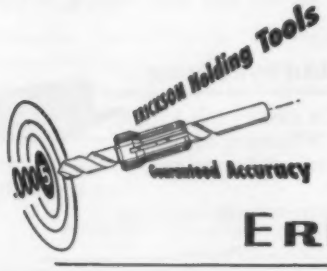
ERICKSON MANDREL ADVANTAGES

- Instantaneous self-release greatly speeds loading and unloading
- Greater holding power because grip extends over entire sleeve length . . . stops wobble and chatter
- Guaranteed accuracy of .0005" T I R
- Each sleeve covers a range of 1/32"
- Sleeves are interchangeable on mandrels of same series

Are you bothered by a tough internal holding problem? Then let us prove that Erickson mandrels speed production for lower unit costs. Give us a call today or write for catalog K.



ERICKSON MANDRELS speed large part handling, too. See how easily this heavy shovel gear, 24 inches in diameter, is being loaded for gear cutting at the Alten Foundry and Machine Works, Inc., Lancaster, Ohio. Larger shovel gears up to 61 inches in diameter are handled just as easily. At Alten Foundry, using an Erickson mandrel, loading and automatic alignment require only 10 percent of the time required by plants using solid arbors and arbor presses. Even this large mandrel is self-releasing. Operator fatigue is practically eliminated.



ERICKSON TOOL COMPANY

2309-J Hamilton Avenue • Cleveland 14, Ohio

COLLET CHUCKS • FLOATING HOLDERS • TAP CHUCKS • TAP HOLDERS • AIR-OPERATED CHUCKS
EXPANDING MANDRELS • SPECIAL HOLDING FIXTURES

ASK YOUR DISTRIBUTOR ABOUT:

The BIG WHEEL...

In The Time Savings Department

Actually, your distributor has *more* than one "big wheel" to help you achieve finishing time savings you've always hoped for! *With Brightboy you may save as much as 50% over methods you're presently using!*

Ask your distributor about these "big wheels" in new, time saving *stock grains and textures* "matched" for jobs where savings count most.

For example: Suggested above is a new rubber-cushioned Brightboy Wheel compounded with silicon carbide. You don't have to be told about the finishes that a grain like this gives. But the combination-action of the abrasive *plus* rubber is really something you ought to see!

Rubber-cushioned Brightboy Wheels are now available in either aluminum oxide or silicon carbide grain. *And,* each of these uniform texture combinations comes in *grain sizes* ranging from extra coarse to extra fine, in soft, firm and tough rubber binders.

QUICK DELIVERIES! Your Brightboy distributor will recommend exactly the grain and texture you need. He can supply you right from stock, or get the wheels you want pronto. Write us on any problem where finishing is involved.

BRIGHTBOY INDUSTRIAL DIVISION
WELDON ROBERTS RUBBER CO.
95 North 13th Street • Newark 7, N. J.
America's Pioneer Manufacturer of Rubber-Bonded Adhesives

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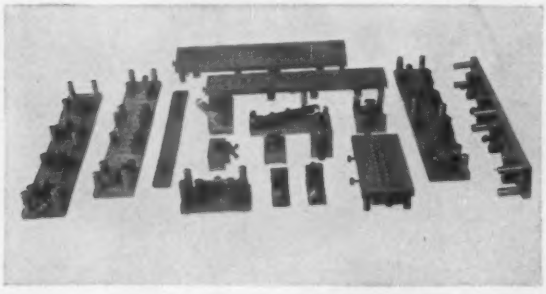
Brightboy
REG. U.S. PAT. OFF.
RUBBER CUSHIONED ABRASIVES

YOU GET *SPEED* PLUS ACCURACY WITH MOORE JIG BORERS

IN THE TOOLROOM

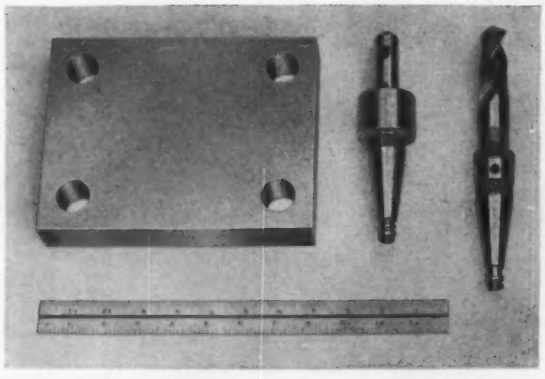
400 holes to "tenths"—5 to 7 minutes each on the No. 1 Moore Jig Borer



Manufacture of this group of drill jigs involves accurately locating, drilling and boring approximately 400 holes. The No. 1 Moore Jig Borer finished them to "tenths" in from five to seven minutes per hole.

ON PRODUCTION

64 holes to ±.0002"—2 minutes each on the No. 2 Moore Jig Borer

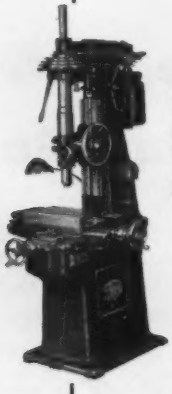


Sixteen pieces like this were located, drilled, bored and checked on a No. 2 Moore Jig Borer with one drill and one carbide bit. The 64 holes were finished in 2 hours and 8 minutes (plus 30 minutes setup) with location and size tolerances ± .0002".

Only a precision machine geared to the high American production standards of ruggedness *and* accuracy can meet these performance requirements. For versatility and speed in spotting, drilling, reaming, boring and checking operations in production as well as tooling, no other moderately-priced machine tool compares with the Moore Jig Borer. And there's no sacrifice of accuracy for speed, since the lead screw measuring system built into each Moore machine permits working to the closest of tolerances.

You'll find that the Moore Jig Borer can pay for itself—*in jig time*. Write today for detailed bulletins.

Moore Special Tool Company, Inc.
738 Union Avenue, Bridgeport 7, Conn.



NO. 1 MOORE JIG BORER
Table working surface of 10"x16". Over 1200 now in use throughout the world. The ideal small, accurate jig borer. Lead screws accurate to .0002" in 16".

NO. 2 MOORE JIG BORER
Table working surface of 10"x19". Heavier cuts, larger holes. Features infinitely variable spindle speeds, three power feed ratios, centralized control panel.

ADD MOORE TOOLS TO YOUR TOOLROOM

JIG BORERS · JIG GRINDERS · PANTO-CRUSH WHEEL DRESSERS · DIE FLIPPERS · MOTORIZED CENTERS · HOLE LOCATION ACCESSORIES

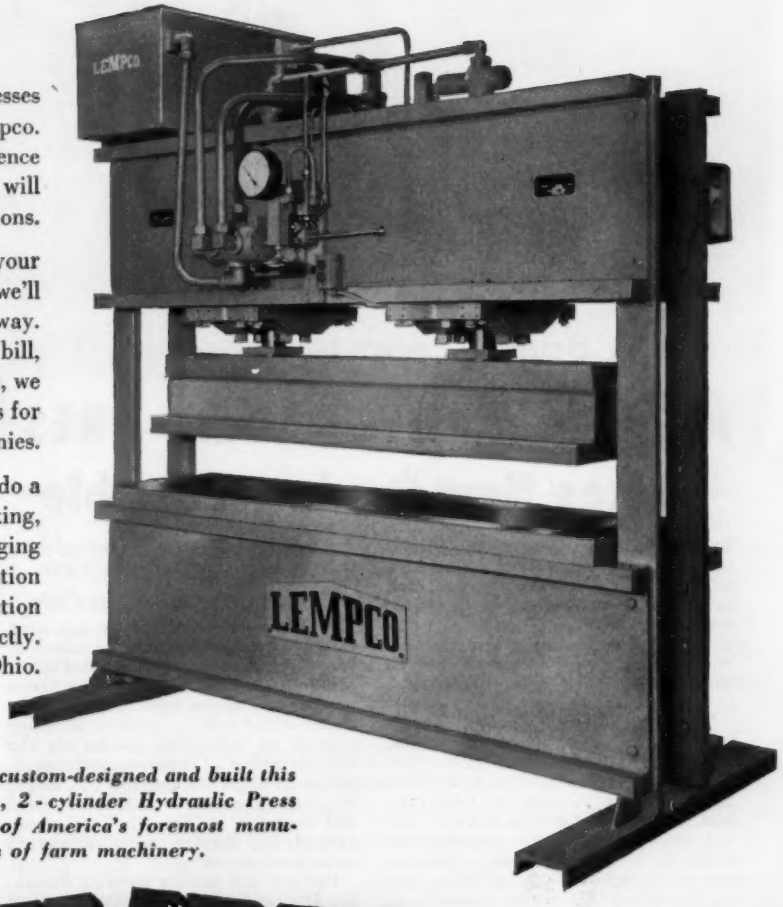
see our catalog in MACHINE TOOL CATALOGS or write for copy

MEASURE YOU UP FOR A HYDRAULIC PRESS?

"Custom tailoring" Hydraulic Presses to do a particular job is our specialty at Lempco. And our 35 years of press-building experience is your guarantee that the press will measure up to expectations.

Lempco will tailor-make a Press to your specifications. Just tell us your needs and we'll get our Engineering Department on it right away. Of course, if a standard Press will fill the bill, we have a full line of those too. Incidentally, we have designed and built Hydraulic Presses for many of America's largest companies.

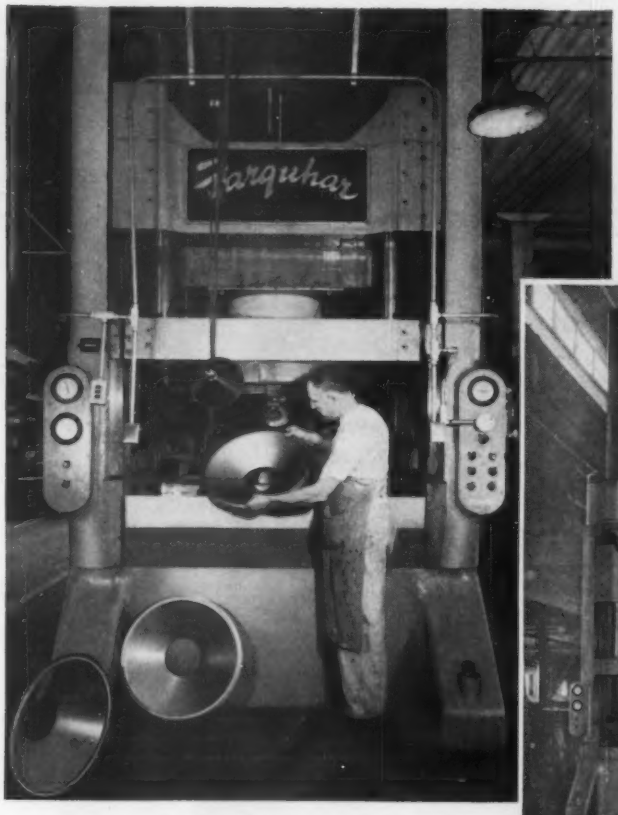
So if you need a special Press to do a special job — straightening, bending, blanking, forming, deep-drawing, hot or cold forging or any other Hydraulic Press operation — drop us a line. We promise you *fast* action and a Press that will fill your needs exactly. Lempco Products Inc., Bedford, Ohio.



Lempco custom-designed and built this 300 - ton, 2 - cylinder Hydraulic Press for one of America's foremost manufacturers of farm machinery.

BEDFORD **LEMPCO** OHIO, U. S. A.

For 35 Years - a Leading Builder of Machine Tools



Operator removing completed ceiling diffuser ring from Farquhar Hydraulic Press at Tuttle & Bailey, Inc., New Britain, Conn.

Tuttle & Bailey reports:

FARQUHAR HYDRAULIC PRESS Makes New Product Possible

Tuttle & Bailey, Inc., New Britain, Conn., produces heating convectors, ceiling diffusers, grilles, registers, etc., as well as several defense products for the United States. When production of the ceiling diffusers was first planned, the company found they could not be manufactured with existing equipment at their plant.

Tuttle & Bailey then consulted with various hydraulic press companies, searching for a design to meet their requirements. Finally, the A. B. Farquhar Company came up with the best design—*and at the lowest cost*—a 450-ton press with pressing ram speed of 0 to 45 in./min., approach and return speed of 390 in./min., and an operating hydraulic pressure of 2650 lbs./sq. in.

The company is very pleased with Farquhar's low maintenance cost, too. The press was installed in Aug. 1950, and has required no maintenance other than occasional gasket replacement.

Farquhar Presses Cut Your Costs

The above installation is just one more example of Farquhar performance in heavy production! Farquhar Presses are built-for-the-job . . . assure faster production due to rapid advance and return of the ram . . . greater accuracy because of extra-long guides on the moving platen . . . easy, smooth operation with finger-tip controls . . . longer life due to positive control of speed and pressure on the die . . . long, dependable service with minimum maintenance cost!

For our free catalog showing Farquhar Hydraulic Presses in all sizes and capacities for all types of industry, write to: THE OLIVER CORPORATION, A. B. FARQUHAR DIV., Hydraulic Press Dept., 1506 Duke St., York, Pa.

Farquhar

HYDRAULIC PRESSES

for Bending • Forming • Forcing • Straightening • Assembling • Drawing
Extruding • Joggling • Forging • and other Metalworking Operations

THE OLIVER CORPORATION • A. B. FARQUHAR DIVISION

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- What is it?
- What are its properties and uses?
- How does it compare with similar materials?

This book tells you!—saves you endless time—eliminates error—in looking up and choosing materials for manufacturing, construction, engineering, chemical processing, etc. Years of work have gone into selecting only the most pertinent facts about 8814 materials, and presenting them in simple, compact form.

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By GEORGE S. BRADY

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Building Materials
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Fabrics, Leathers, Organic Materials
Fibers
Finishing Materials, Pigments, Solvents
Foundry Materials
Heat-treating Materials
Industrial and Plating Chemicals
Iron and Iron Alloys
Light Metals and Alloys
Lubricants, Oils, Greases
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Mallory No-Chat* Shanks
end tool vibration problems

A ½" square No-Chat shank in a standard tool holder helps make a clean cut on a shaper . . . on 0.020" cut, 12" long, at 65 strokes per minute.

NEEDLESSLY high machining costs caused by tool chatter can now be substantially reduced by using Mallory *No-Chat* tool shanks and boring bars. Made of a special high density metal developed by Mallory research, *No-Chat* shanks stop tool vibration at its source. The higher initial cost is quickly repaid many times over by these production savings . . .

HEAVIER CUTS can be made without chatter.

SMOOTHER CUTS—finish grinding can often be eliminated.

LESS DOWN TIME—tools run longer between grinds, because wear caused by vibration is reduced, and because tools run cooler due to *No-Chat's* high heat conductivity . . . three times that of steel.

BORING BARS of *No-Chat* can be used with large length-to-diameter ratio without fear of breakage . . . and are being used successfully to turn small internal diameters that formerly had to be finished by grinding.

SHANKS ARE RE-USABLE—new tips are readily brazed in place. *No-Chat* metal does not anneal . . . eliminates grain growth problems.

This new concept in cutting tool performance can make big improvements in the tools you manufacture or use. For details, write for a copy of our *No-Chat* Technical Bulletin.

Expect more . . .

Get more from **MALLORY**

**TRADE MARK. PATENT APPLIED FOR*

In Canada, made and sold by Johnson Matthey & Mallory, Ltd., 110 Industry Street, Toronto 15, Ontario.

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MALLORY
P. R. MALLORY & CO., Inc., INDIANAPOLIS 6, INDIANA

For information on titanium developments, contact Mallory-Sharon Titanium Corp., Niles, Ohio

This Staples Carbide-Tipped Shell Type Expansion Reamer has won unchallenged leadership for low cost, high precision reaming in mass production. In automotive, aircraft engine, household appliance, farm machinery and many other metalworking industries, this Staples tool is daily proving its ability to produce close tolerance, fine finish work at exceptional tool cost savings.

When the tool wears undersize, it can be *accurately* expanded to original diameter by driving the shell up the tapered arbor. After repeated sharpening and expansion, the tool is returned to new condition simply by replacing the worn shell—a standard stock item.

Enthusiastic comments from many manufacturers attest to the real savings this Staples Reamer produces. Try it on your production lines. Your inquiry will bring a prompt response.

Staples CARBIDE-TIPPED CUTTING TOOLS

A complete line of Circular Carbide-Tipped Tools, Expansion Reamers—Special Tools

THE STAPLES TOOL COMPANY

CINCINNATI 25, OHIO

STRAIGHT FACTS ABOUT STRAIGHT TUBING

from MACK-HEMP'S ROTARY STRAIGHTENER CASE HISTORY FILE

HARD BRASS TUBING STRAIGHTENED 250 FT. PER MINUTE; "SKIN HARDENING" ON COPPER TUBING ACCOMPLISHED with Model AXY Rotary Straightener

Straightening brass tubing at speeds up to 250 ft. a minute, the Model AXY Rotary Straightener meets exacting straightness specifications at The National Copper & Smelting Company, Cleveland. Skin hardening of soft copper tubing, not possible prior to installation of the straightener, now protects the tubing against accidental damage to straightness and roundness during handling, yet permits easy bending during fabrication.

The Model AXY straightens hard brass tube in diameters of from ⅜ to ⅞ in. and copper tube from ¼ to 1⅛ in. diameters. Wall thicknesses of the 12 to 20 ft. lengths vary from .020 to .125 in.

PRODUCTION UP 13 TIMES— 7,500 FT. OF TUBING STRAIGHTENED PER DAY with a Model AY Rotary Straightener

Straightening of these stainless steel tubes was expedited with the installation of this Model AY Rotary Straightener at Bell Aircraft's Niagara Falls Plant. Bell had been straightening 300 pieces of 23 in. long tubing per day. Now, up to 7,500 ft. of tubing per day is straightened. Absence of guides and design of its six straightening rolls assure perfect product finish.

Each Bell rocket engine for guided missiles uses tubes made from fully annealed stainless steel No. 304. This tubing has a ⅜ in. O.D., a .028 in. wall, and a tensile strength of 75,000 psi.

There's a MACK-HEMP Guideless Rotary Straightener to remove "bows," "bends" and "hooks" from all types of metal tubing — from .050 in. fine instrument tubing to 15 in. welded steel pipe — with high speed, low cost, consistent accuracy and superior surface quality.

Perhaps our large case-history files of successful solutions hold the answer to your tough tube straightening problems. Write for our new Bulletin No. 55 for more detailed information.

MACKINTOSH-HEMPHILL COMPANY PITTSBURGH U.S.A.

MACKINTOSH-HEMPHILL COMPANY

Makers of the rolls with the striped red wabblers

PITTSBURGH AND MIDLAND, PA.

MACKINTOSH-HEMPHILL PRODUCTS INCLUDE: all types of cast mill rolls . . . improved Johnston patented corrugated cinder pots and slag handling equipment . . . Mackintosh-Hemphill rotary straighteners . . . electronically controlled contouring lathes . . . shears . . . end-thrust bearings . . . steel and special alloy castings . . . reversing hot strip mills . . . Y-type cold strip mills.

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Hardened and ground to high standards of accuracy and quality.

These products are built by long established, reputable West German manufacturers, and tested for performance to American standards. Immediate delivery from New York City stock at low competitive prices.

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All parts hardened and ground. Simplicity of construction insures trouble-free operation.

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From the *American Machinist* Library of *Tips for Top Shop Men*

DESPISE the political maneuver called "damnation by innuendo". The apparently innocent question, "Does Johnson beat his wife?" is just as harmful to Johnson in the long run as your positive statement that he does. Watch remarks like "Is Smith slipping?", or "Is Jones' health poor?", unless you have a malicious desire to see the thing happen.

HERE'S YOUR CONSTANT INDEX TO MORE PROFITABLE PRODUCTION

This is just a reminder there's an easy way in which to get information in a hurry for solving those knotty production problems you're faced with daily.

Listed below is a general subject index to the answers you need, as you'll find them in your 1955 PRODUCTION PLANBOOK issue of *American Machinist.*

- **A** Management, Personnel
- **B** Machining
- **C** Tooling
- **D** Pressworking, Molding, Casting
- **E** Inspection, Testing, Quality Control
- **F** Assembly, Welding, Portable Tools
- **G** Heat-Treat, Cleaning, Finishing
- **H** Materials, Components
- **I** Materials Handling, Services
- **J** Prize Ideas, Rebuilt Equipment

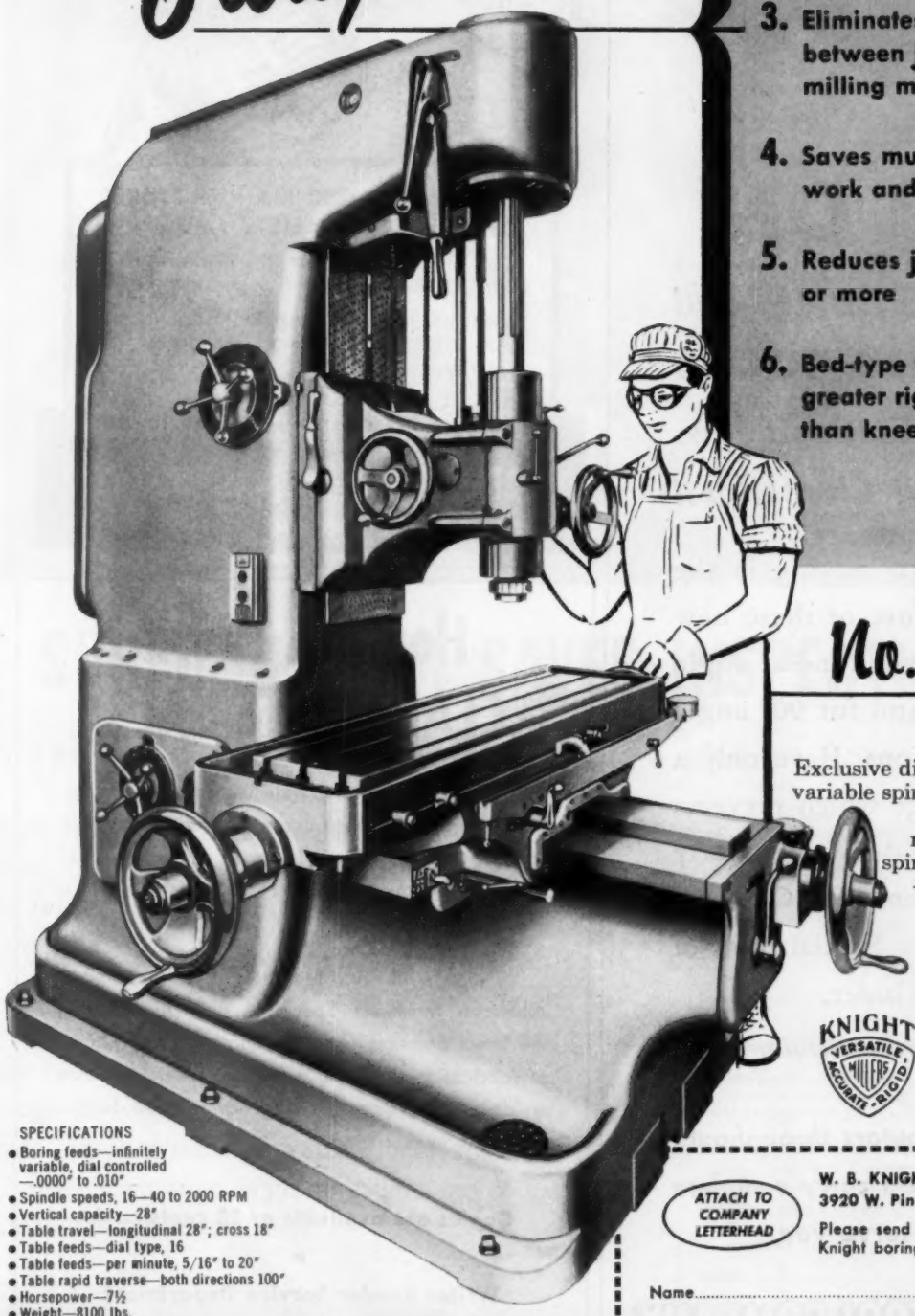
And that's not all. An integral part of these ten sections are hundreds of informative advertisements . . . a list of manufacturers offering free product literature . . . and an alphabetic listing of products and services advertised in the PLANBOOK.

Information like this can help you find sure roads to faster, lower-cost production.

American Machinist
McGraw-Hill Building
New York 36, N. Y.

How 1 Machine Can Save Time & Money 6 Ways!

1. **A precision jig borer with extra talent!**
2. **Also handles an extreme range of difficult milling operations**
3. **Eliminates work transfers between jig borers and milling machines**
4. **Saves much of the layout work and preliminary drilling**
5. **Reduces job time up to 50% or more**
6. **Bed-type table guarantees greater rigidity and accuracy than knee-type**



KNIGHT'S No. 50

Exclusive dial-controlled infinitely variable spindle feeds—Extra-long travel of the 1-piece roller bearing-mounted spindle increases capacity—Quick-action controls all operated from 1 position—Rugged, rigid construction for accuracy—Power to spare—Many other time-&-money-saving features!

KNIGHT VERSATILE MILLERS ACCURATE · RIGID

SPECIFICATIONS

- Boring feeds—infinitely variable, dial controlled —.0000" to .010"
- Spindle speeds, 16—40 to 2000 RPM
- Vertical capacity—28"
- Table travel—longitudinal 28"; cross 18"
- Table feeds—dial type, 16
- Table feeds—per minute, 5/16" to 20"
- Table rapid traverse—both directions 100"
- Horsepower—7½
- Weight—8100 lbs.

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3920 W. Pine Blvd. St. Louis 8, Mo.

ATTACH TO COMPANY LETTERHEAD

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Please send catalog on No. 50 and other Knight boring and milling machines.

Name.....

Title.....

☐ Send information on Knight's 20" and 42" Rotary Tables.

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With Single Cutting Edge

Revolutionary! Chatterless!

• Greater ease in cutting is the outstanding feature of these new cutting tools—made for 82° angle countersinking and for 90° angle deburring operations. Have only a single cutting edge which prevents chatter. Both tools are regularly made for right hand cut. One trial will convince you. Special tools of this type made to order.

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THE WELDON TOOL COMPANY

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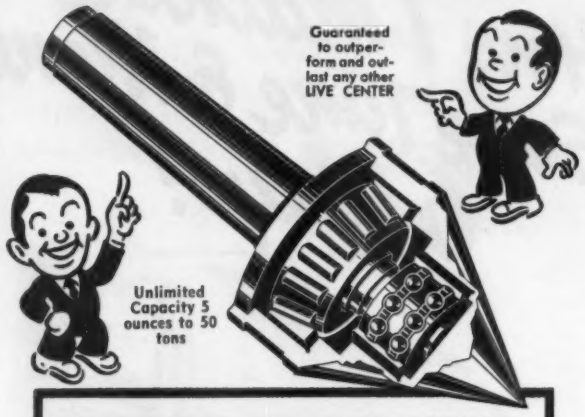

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Based on long-life, precision performance, MARVECOES are the most economical live centers you can buy.

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How to Work CLAD MATERIALS

The use of clad materials is doubling and redoubling, owing to their many advantages in applications where corrosion resistance, or high thermal conductivity coupled with corrosion resistance is important.

"How to Work Clad Materials" is a fifteen-page *American Machinist* Special Report summarizing the latest practices in fabricating clad. All phases of fabrication are discussed, with the emphasis on welding, since there is a particular need for information in that area.

•

Copies are available at 25 cents each

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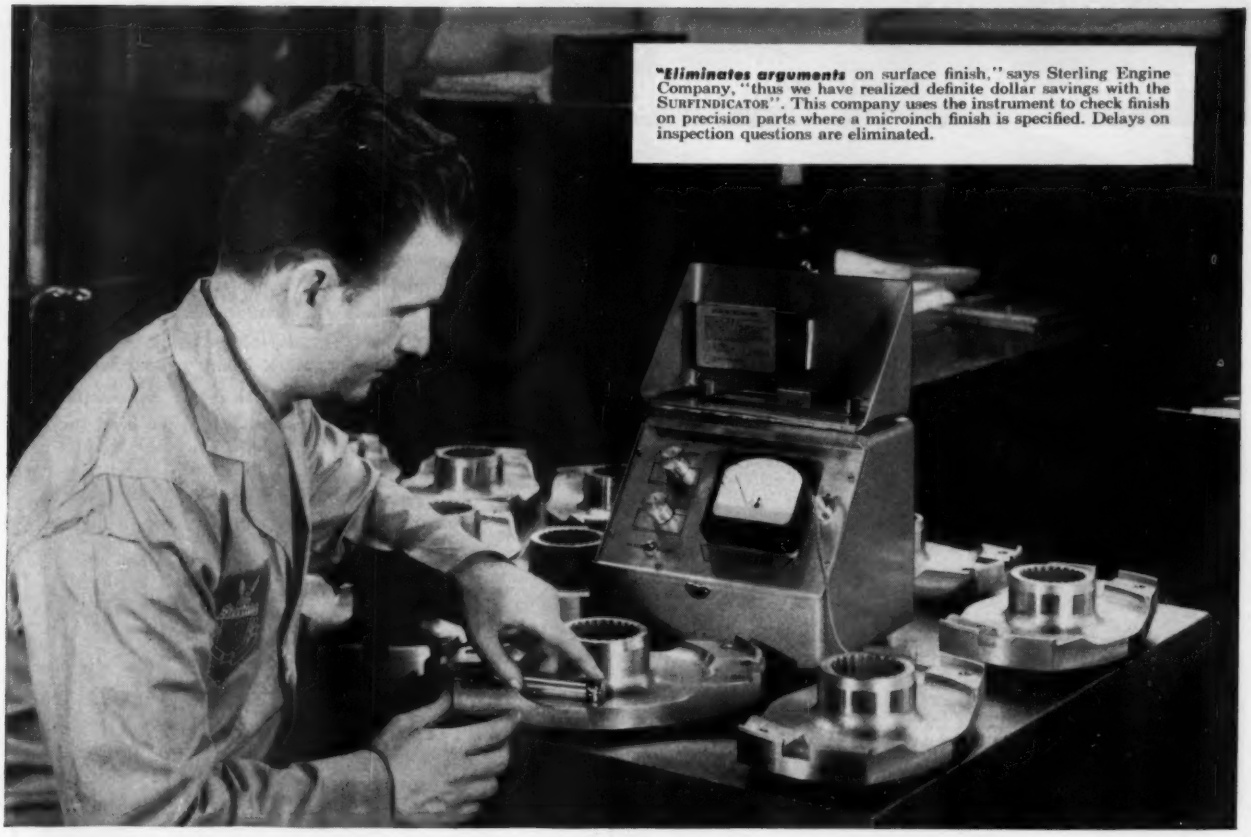
How to reduce your costs with surface finish control



"Eliminates arguments on surface finish," says Sterling Engine Company, "thus we have realized definite dollar savings with the SURFINDICATOR". This company uses the instrument to check finish on precision parts where a microinch finish is specified. Delays on inspection questions are eliminated.

SURFINDICATOR* SAVES INSPECTION TIME

WITH SURFACE FINISH CONTROL you can reduce your production costs—speed inspection, eliminate costly over-finishing, end guesswork. And you don't have to invest in costly laboratory equipment to realize these benefits.

The SURFINDICATOR was designed for you to use on the production line. It can be quickly set up—operated by anyone. It is a precision instrument that can be calibrated on the job, yet is priced within the range of even the small-volume shop. In case after case the SURFINDICATOR has quickly paid for itself through economies in production. Send coupon now for complete information.

*Trade-Mark

Surfindicator used to check surface finish on blades. The instrument allows a positive reading to meet specifications, as opposed to a visual inspection possible only with trained personnel.

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INDUSTRIAL AND RESEARCH INSTRUMENTS
PIEZO-ELECTRIC MATERIALS • ACOUSTIC DEVICES
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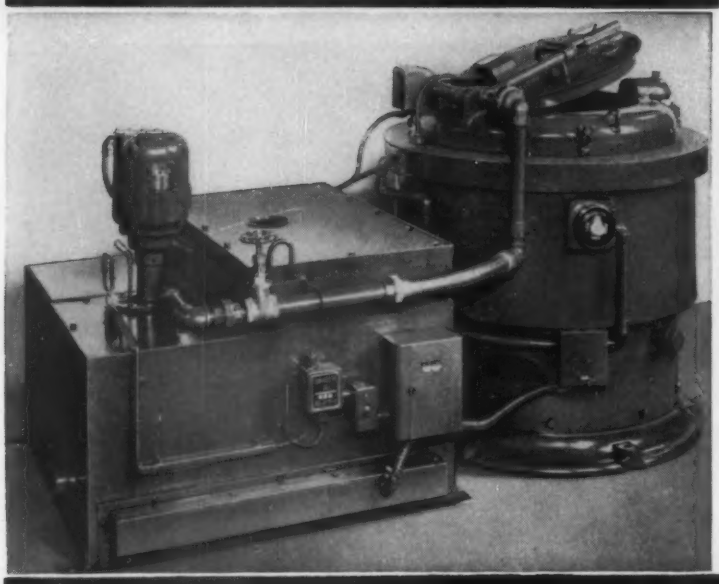
CONTROLLED IMPREGNATION by the BARRETT "HYDEWA" Centrifugal Process offers many advantages



The Hydewa Method assures fast production, by reducing the customary hours to minutes, high penetration, with controlled impregnation, also positive expulsion of air from the articles being impregnated.

The Centrifugal Process is limited in application only to the size of the articles that may be rotated in fair balance in the revolving bowl. Coils, condensers, transformers, braiding cotton insulated wire, paper tubes, pressboard spacers, rawhide and bristles, are but a few of the many typical products now being processed in Barrett Impregnators. Many products heretofore considered impractical for satisfactory impregnation by other methods have been successfully handled.

Basic units are self-contained, direct motor driven. Special arrangements and supplemental equipment also provided.

Submit your problem and samples for test and recommendations.

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RANDALL and STICKNEY Dial Gauges and Indicators

Model C 50 B

are accurate, reliable and built to stand hard usage.

Model "C 50 B" has a 2⅛" overall diameter, balanced dial 0-25-0 with .0005" graduations, ½" range and movable dial easily set at zero.

The cases on all R. & S. Gauges are made from sturdy castings. The case and plate are two separate units so that repairs can be made easily.

This style instrument can be furnished with various dials, graduations and ranges, in both English and Metric. There is a R. & S. Gauge for practically every purpose. Write for circulars describing our complete line.

FRANK E. RANDALL CO., INC.
248 Ash St.
Waltham 54, Mass., U.S.A.
Makers of Dial Gages Since 1896

INDEXING TURNTABLES

A SPECIALIZED CAM MILLING SERVICE, SPOT AND BUTT WELDING, TURNTABLES, POSITIONERS FOR BRAZING, SPRAYING, WELDING, SOLDERING OVER 100 TYPES CONTRACT PRODUCTION, SPECIAL AUTOMATIC MACHINES.

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LUERS Patented Cutting Off Tool Holders
Patented Cutting Off Blades

ONLY the PATENTED construction of LUERS cutting off BLADES permits normal expansion of bursting chips — MEANS MAXIMUM CUTTING EFFICIENCY.

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J. Milton Luers — 12 Pine St. — Mt. Clemens, Mich.
Produced under License Issued by John Milton Luers Patents Inc.

WALTHAM SUB-PRESSES...

. . . for precision work

Arch Sub-Press

The cylindrical plungers in the Waltham Sub-Presses slide in babbitted bearings. This bearing is tapered on the outside and can be forced downwards, thus reducing the inside diameter to fit the plunger when the latter becomes worn through use. Exact alignment and constant precision can be maintained throughout the life of the die. Write for information about the nine sizes.

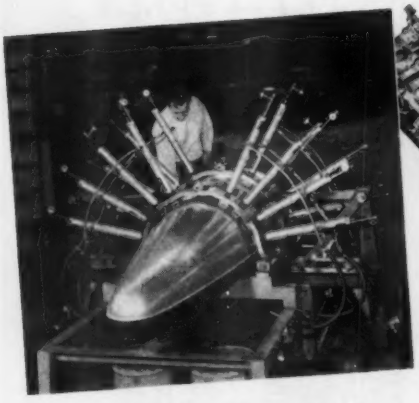
Overhang

WALTHAM MACHINE WORKS
HIGH STREET, WALTHAM, MASS.

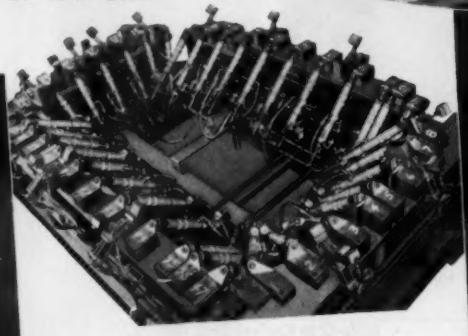
MULTIPLE DRILLING WITH KELLER "Airfeedrills"

Low investment and easy change-over make Airfeedrill setups the ideal way to make accurate holes at low cost

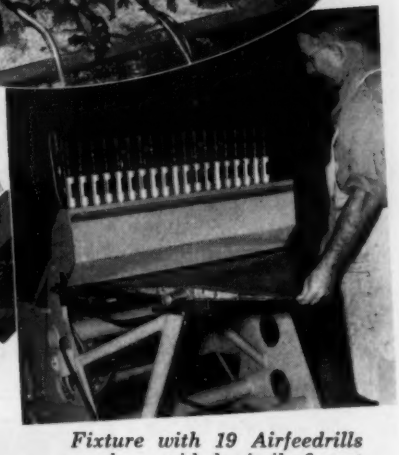
Eight Airfeedrills (four with dual spindles) drill 12 holes in 24ST aluminum part



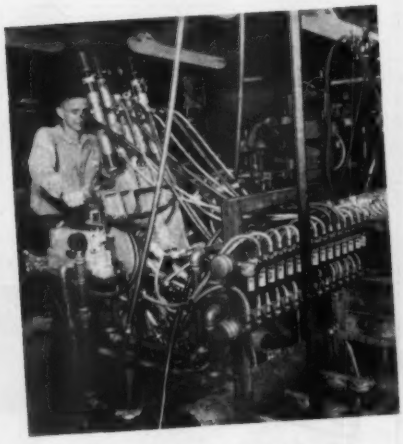
Sixteen holes made simultaneously on teardrop gas tank. Note the drilling angles



47 Airfeedrills on a single fixture for making trim holes in automobile roof panels



Fixture with 19 Airfeedrills used on guided missile fins at an aircraft plant



Fixture with 16 Airfeedrills used on section of automobile instrument panel

Here is the new way to handle multiple drilling jobs without investing in expensive machine tools. Simply build a fixture on which to mount Keller Airfeedrills . . . connect them with your air supply . . . and you are in business.

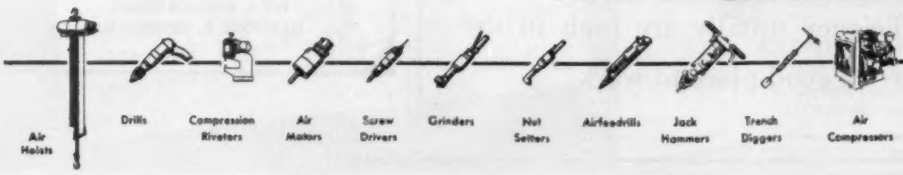
When the job has been run, the Airfeedrills are detached for use on another job. Where jobs are intermittent or short run, Airfeedrills permit high production where no other multiple drilling method would be economically feasible.

If you are not acquainted with the remarkable possibilities of Keller Airfeedrills, send for information without delay. Ask for Catalog Sections 92 and 92A.

KELLER "Airfeedrills"

KELLER TOOL

DIVISION OF **GARDNER-DENVER**



1303 Fulton Street
Grand Haven, Michigan

Horizontal Swivel Type

MULTI-PURPOSE WONDER GRIP VISES

4 STEPPED JAWS PERMIT CLAMPING of rough castings, irregularly shaped, round, and tapered pieces accurately and quickly, eliminating need for special jigs or fixtures. Narrow stepped jaws allow free access to and measuring of work pieces and provide clearance for cutting tools. Small work pieces machined on three sides without reclamping. Easy and quick to mount and align on any machine. Holds rigid in any position without vibration. Various capacities and extra soft jaws available.

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TAPPING ATTACHMENTS

Reversible safety tapping attachments with adjustable graduated friction drive, hardened, ground and lapped, complete with torque bar and handles. Precision made throughout by long established reputable West German factory.

Tested for Performance to High Amer. Standards
Immediate Delivery from N.Y. Stock

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- **Quick Change Chucks and Collets**
- **Wille-Grip Keyless Drill Chucks**
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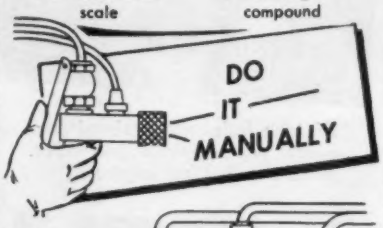
☐ Insulating coatings	☐ Radio-active oxides
☐ Amorphous metal	☐ Dirt
☐ Discoloration	☐ Grease
☐ Lacquer	☐ Oil
☐ Plastic flash	☐ Rust
☐ Rubber flash	☐ Varnish
☐ Glass flash	☐ Paint
☐ Enamel flash	☐ Plate
☐ Imbedded metal	☐ Core sand
☐ Lead deposits	☐ Silicate coatings
☐ Carbon	☐ Excess solder
☐ Brazing flux	☐ Ceramic deposits
☐ Weld spatter	☐ Graphite
☐ Stains	☐ Slag
☐ Heat treat scale	☐ Polishing compound



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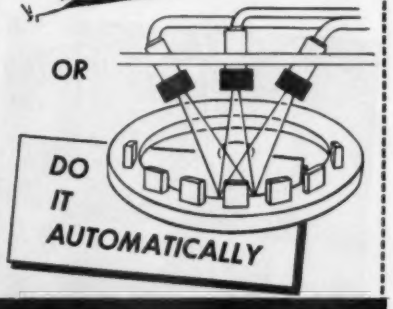

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THE **CRO-PLATE COMPANY** INC.

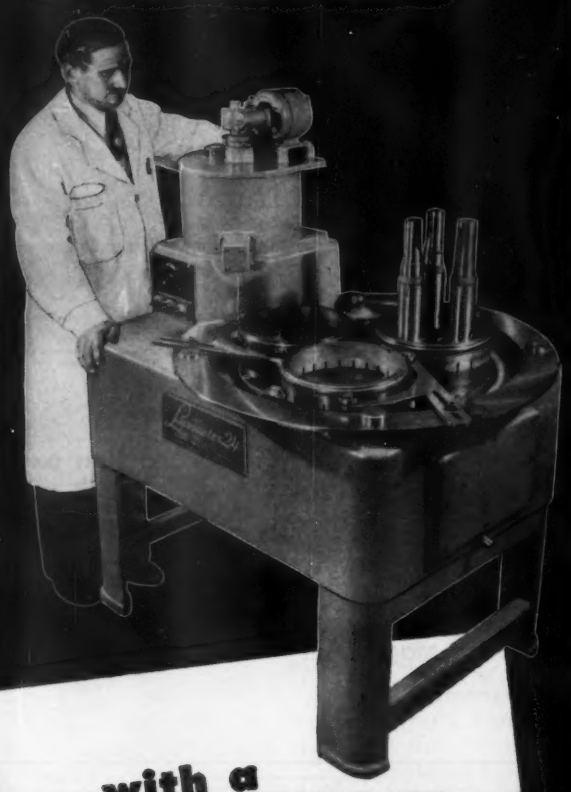
747-A WINDSOR STREET

HARTFORD 5, CONNECTICUT

From the *American Machinist* Library of *Tips for Top Shop Men*

BUILD a good reputation in your community. Morale and efficiency usually are high in the plant that is known as "a good place to work."

Lapping For Precision Flatness and Parallelity in Production Quantities



...with a LAPMASTER

This is the machine for you if you want precision flatness in production quantities at low cost. Lapmasters readily lap to the extreme close tolerance of one light band (.0000116") or less. In addition they produce an extremely fine finish to as low as 1 RMS. They are available with 12", 24", 48", 72" or 84" lapping plates.

THIS IS HOW THE LAPMASTER WORKS

I, a heavy cast iron lap plate revolved slowly under power. **II,** large cast iron conditioning rings are held in position and rotate freely on the lap. **III,** work pieces are placed inside the conditioning ring where they also rotate on the lap. **IV,** a liquid vehicle containing fine loose abrasive flows on the lap plate and is uniformly distributed under the work pieces. At the same time the rotating conditioning rings preserve the flatness of the lap plate. These three essential features, combined with the rapid cutting action of loose abrasive produces a flatness which meets every production requirement.

1 Operator requires no previous lapping experience.

2 Lapping with loose abrasive and without excessive pressure eliminates heat and subsequent distortion.

3 Simplicity of design provides accessibility and allows ease of loading and unloading.

4 Loose abrasive distributed evenly over lapping area insured uniform results.

5 Precision laps identical parts in one cycle or parts of various shapes, heights and materials in one cycle.

6 Lap plate always kept in condition while in operation. No down time required for truing or reconditioning.

Learn more about the possibilities of production lapping and the interesting subject of measuring flatness. The illustrated fact-filled booklets are yours for the asking. Write today. AM 1-55

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Lapmaster Division **CRANE PACKING COMPANY** 38 YEARS INDUSTRIAL PROGRESS

KEYSEATING
The Modern Way

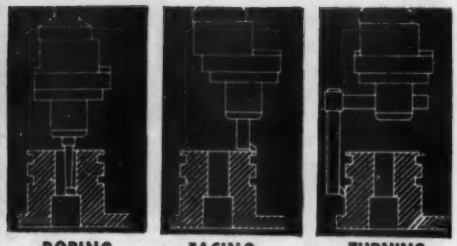
Illustration shows typical set-up for cutting taper keyways with table tilted.

Machines are made in three sizes for keyways 1/16" to 1" in width.

Great simplicity and ease of operation of Davis Keyseater, assure the user of accurate, time saving work.
Let our engineer study your keyseating problems.

DAVIS KEYSEATER COMPANY
403 EXCHANGE ST. ROCHESTER, N. Y.

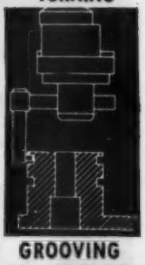
A Boring Head That Won't Face is NOT Complete

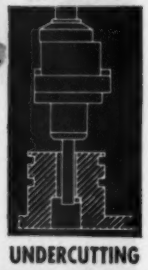


CHANDLER-DUPLEX Does ALL IN SET-UP
BORING
FACING
TURNING
GROOVING
UNDER-CUTTING

CHANDLER-DUPLEX *combines* boring and facing — permits all these operations in one set-up. Built for efficiency, accuracy and stamina.

A Model for Any Size Machine





Write today for full details and Catalog on this combined Boring and Facing Toolhead

CHANDLER TOOL CO.
Muncie, Indiana

COMBINED BORING & FACING TOOL HEADS
Chandler-Duplex

Anti-Friction • High Speed • Carbide Tipped — 200 Models, speeds up to 4000 RPM, capacities to 200 tons.

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HARDNESS TESTERS for ALL Brinell Testing. Particularly adapted for use on Castings and Forgings.

Puts an actual load of 3000kg on a 10mm ball.
Throat, 4" deep.
Gap, 10" high.
Weight, 20 lbs.

Can be used in any position—even upside down.

Equally accurate as portable or stationary equipment.

Test head removable for testing larger pieces beyond the capacity of the standard base.

ANDREW KING
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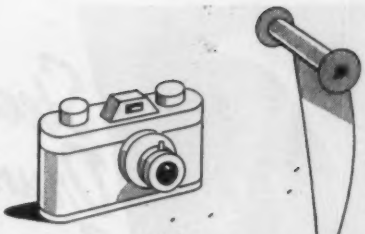
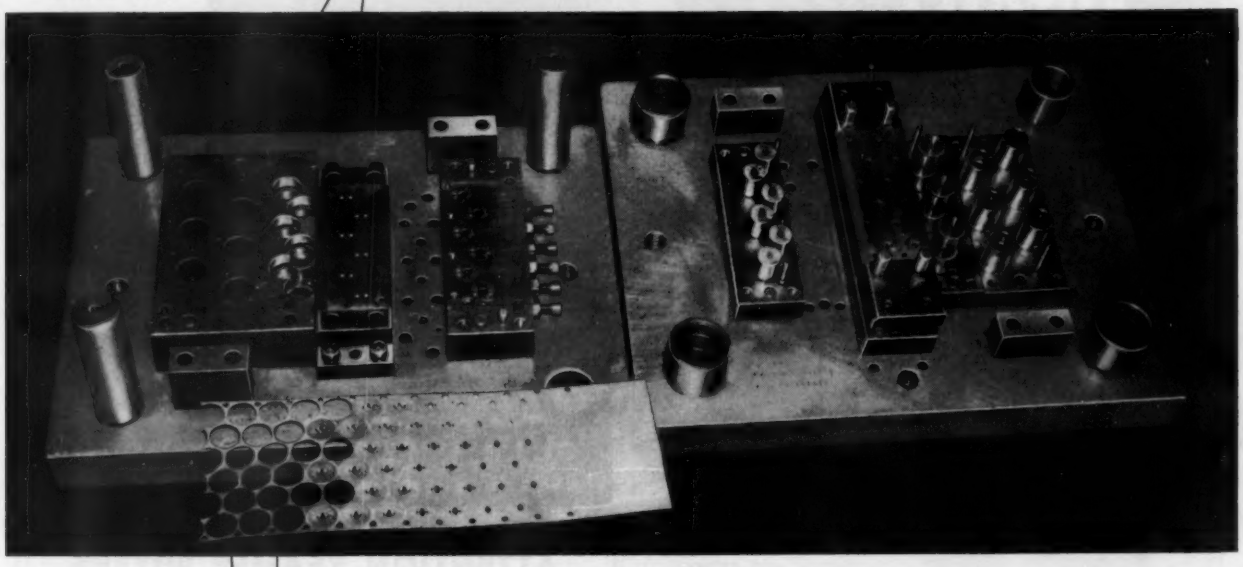


Over 150 Million Stampings from this ONTARIO Die



600,000 Film Spool Flanges PIERCED, EMBOSSED, STAMPED and BLANKED per Grind

Production engineers at an eastern camera manufacturing plant have reported excellent results from their Ludlum Ontario film-spool-flange die. The Ontario die performs the multiple operations of piercing, embossing, stamping, and blanking.

Operating at 130 strokes a minute, the big die has produced over 150,000,000 parts. Runs as high as 600,000 have been made between grinds. For this operation, Ontario is air cooled from a temperature of 1850 F, then tempered at 350 F for six hours. This results in a Rockwell C hardness of 60-62.

Ludlum Ontario is an air hardening die steel of the high carbon/high chromium type. It has all the desirable properties of such steels—resistance to abrasion, high hardness and excellent non-deforming characteristics. In addition, it is tougher but easier to machine than the higher carbon/high chromium types which are usually oil hardening.

For the finest in tool steel to help solve your cutting, forming, or blanking problems, call your nearest A-L office or distributor today, or write *Allegheny Ludlum Steel Corporation, Oliver Building, Pittsburgh 22, Pennsylvania.*

Write for your
ONTARIO BLUE SHEET

A concise 4-page booklet of facts on the handling and shop treatments of Ontario. Included is complete information on forging, annealing, tempering, etc. and detailed laboratory data on physical characteristics. *Ask for your free copy.*

Address Dept. AM-611

For complete **MODERN** Tooling, call

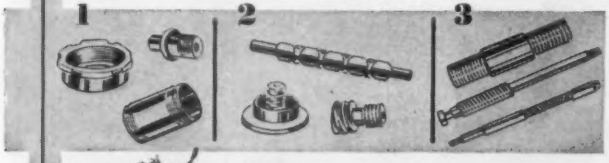
Allegheny Ludlum

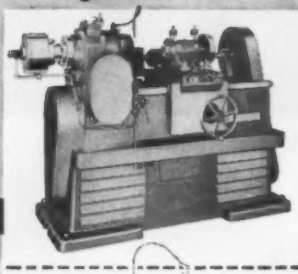
WAD 5348

AL® FINE TOOL STEELS SINCE 1854

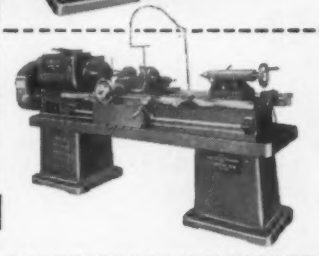
CUT PRECISION THREADS FASTER *with these 3* COULTER AUTOMATICS!

Whenever you use a Coulter, you'll see production figures skyrocket . . . production costs plummet. Try any one of these Coulter Automatic Threading Machines — and you'll want all three:

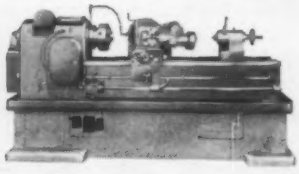




1 "H1" Hob Thread Milling Machine cuts precision, internal and external threads . . . AUTOMATICALLY.



2 "L1" Threading Lathe cuts precision, square, standard and 29 degree threads... AUTOMATICALLY.



3 "Threadmaster" Thread Milling Machine cuts precision, long and short traversing, elevating, cross feed and lead screws ... AUTOMATICALLY.

Without obligation, consult our engineering staff with your specific threading problems. Catalog and machine specifications available upon request.

MACHINE TOOL BUILDERS SINCE 1896

The James Coulter Machine Co.

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Steel Drum Gears- for HOISTING ENGINES

Your gear requirements may never call for hoisting engine steel drum gears to pull freight cars—for which purpose Stahl manufactured the gears illustrated. However, for any gear problems, in any size or quantity, it will more than pay to get that next estimate from Stahl.

SPURS TO 72" PD, 1 DP
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HEAT-TREATED, CASE OR FLAME HARDENED GEARS — OF CARBON OR ALLOY STEEL

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HOW TO KNOW *WHEN* YOU SHOULD BUY SPECIAL MACHINES

Before you buy, scan the 14 cost-cutting evaluation steps listed in the "nugget" Management Section of your 1955 PRODUCTION PLANBOOK issue of *American Machinist*.

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The *Scleroscope* is the only hardness tester that takes in the entire range from the softest to the hardest metals without any adjustments.

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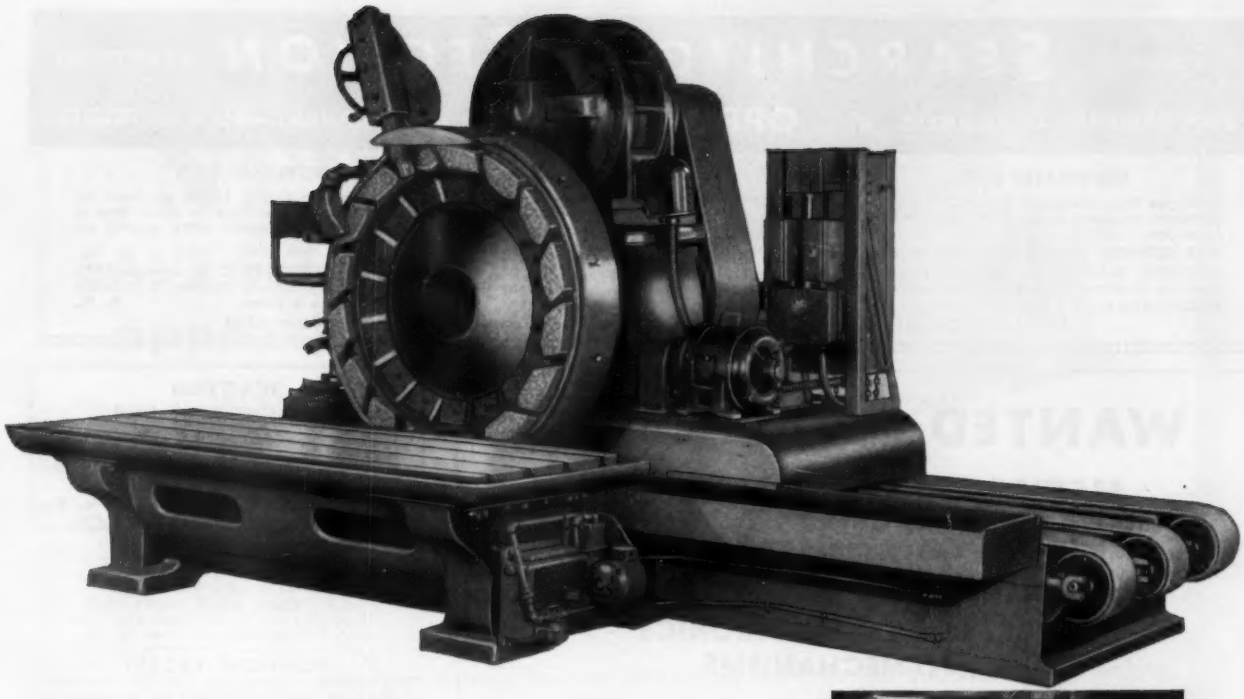
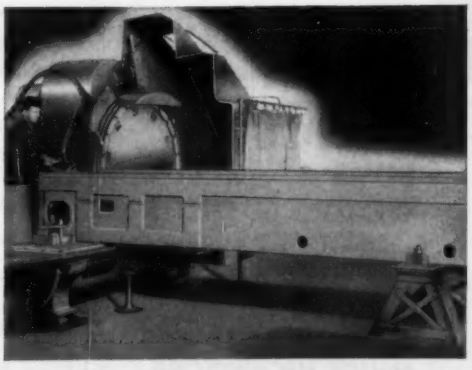


MATTISON TRAVELING WHEEL GRINDER FOR FAST FINISHING OF LONG OR LARGE PARTS

If your work consists of long or bulky parts, Mattison UK Traveling Wheel Grinders will finish them at a surprising rate of speed and accuracy and at very low cost. Large and awkward shaped pieces are frequently ground in a good deal less time than previous method. The part, no matter how large, is clamped in a stationary position and the grinding wheel passes across the surface to be finished. Amount of floor space needed is little more than half that required by traveling table machines of equal capacity. The operator's position on the carriage, together with the convenient grouping of all controls, makes for utmost grinding accuracy and speed regardless of the size of the job.

For further information, send for new free circular No. 844-2 RM covering this machine.

The operator rides the carriage of the UK Traveling Wheel Grinder. From this position he gets a safe unobstructed view of the grinding wheel at point of contact and can observe the work at all times.



Heavy work of practically any length can be rapidly ground to close tolerances with no more power required than for lighter work — the UK's table is always stationary. Picture shows end of 35′ base being ground.

MATTISON MACHINE WORKS

ROCKFORD · ILLINOIS

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MECHANICAL — ELECTRICAL

For design and development of machine tools.

HYDRAULICS — ELECTRONICS
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Inquiries held confidential

MONARCH MACHINE TOOL COMPANY

SIDNEY, OHIO

WANTED

MACHINE TOOL MEN

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330 W. 42nd St., New York 36, N. Y.

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Address to office nearest you
NEW YORK: 330 W. 42 St. (36)
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POSITIONS VACANT

RESEARCH ENGINEER to take charge of advance research, design and development work on precision cylindrical grinding equipment. Must know fundamentals of electronic, hydraulic and cam-activated controls. Must be thoroughly grounded in machine tool design, assembly and operation and be able to develop ideas into practical product application. Modern plant, location mid-Atlantic state, small town. Salary over $12,000. P-5219, American Machinist.

ABRASIVE ENGINEER to head up basic research and development of abrasive products used by machine tools on precision machining. Must have background in surface grinding techniques, surface finishes and speeds and feeds of abrasive wheels for various application. Required also is knowledge of grits, bonding materials and wheel forming techniques. Newly constructed plant and laboratories located in medium sized mid-western city. Salary over $10,000. P-5223, American Machinist.

SELLING OPPORTUNITY OFFERED

MANUFACTURERS' REPRESENTATIVES — To represent large mid-western manufacturer of speed reducing transmissions and cut gears of all types, on a commission basis, for territory of Detroit, Michigan or Birmingham, Alabama — must be experienced in engineering and sales. All replies will be held strictly confidential. RW-5106, American Machinist.

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10" X 36" Norton MD1 CIO.
#5 Brown & Sharpe. 1943
#4H Landis 4" X 12"
12" X 18" Cincinnati. M.D.

#2 MH. Cincinnati Univ. Mill, 1942.
#2 Kempsmith Maximiller Univ., 1938.
7" Western Radial Drill.
8" X 84" Seneca Falls Lo-Swing Lathe.
8" Arter Rotary Surf Grinder, M.D.

BALL MACHINERY COMPANY

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FUNDS AVAILABLE
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Propane Gas Installations
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— illustrated —
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10 to 12 ft. lengths
ALL METALS
Also Screw Machine Products to Order
EASTERN
Machine Screw Corp.
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Makers of H & G Die Heads

WANTED

Type "A" & #3 Barber Colman Gear Hobbers.
1500 ton Hydraulic Press, 14" st; 58"x39 bed.
3U Potter & Johnson Speed-Flex.
#424—#425 or #525 Baker Drill Press or equiv.

JULIUS J. SCHNEIR & CO., INC.
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BOX NUMBER

When answering the classified advertisements in this magazine, don't forget to put the box number on your envelope. It's our only means of identifying the advertisement you are answering.

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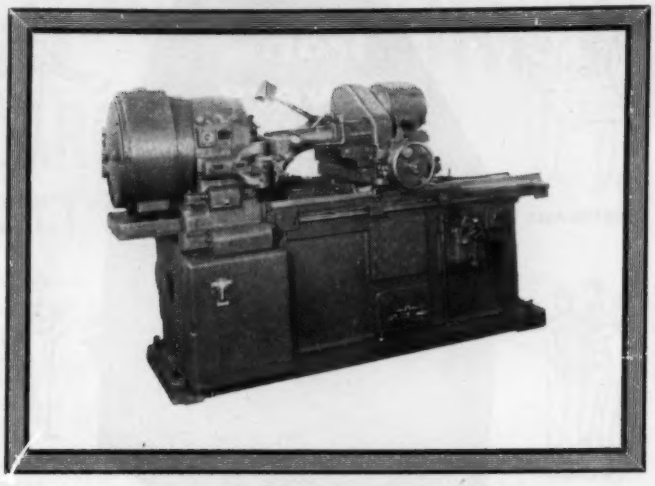
For All Kinds of Castings, Large or Small
MATCH PLATE WORK A SPECIALTY
Put your pattern problems up to us – we will take care of them.
GENERAL PATTERN WORKS
2233 Buck Street Cincinnati, Ohio

BRAND NEW

SAVE $17,500.00 approximately

Yes, save $17,500.00 over the cost of a new machine. We have only four left from an original lot of fourteen. Our machines are complete with all electrics, pumps, gauges, holders, etc. AND we can ship TODAY.



NO. 73 HEALD INTERNAL GRINDER

Hole thru standard workhead spindle—10" diameter. On average cylinders, length of hole that can be handled—14" long.

Wire, phone, write for details on the above as well as the partial listing below.

Here are a few of the more than 2000 Machines currently in stock...

HORIZONTAL BORING MILLS

#7 Barrett Horizontal Boring Machine, 1945
3" Universal Horizontal Boring Mill, m.d.
25T Giddings & Lewis, m.d., late
No. 32 Lucas, m.d.

VERTICAL BORING MILLS

24" Bullard, 1943
36" Bullard, m.d.
42" Bullard Spiral Drive, m.d., 1942
42" Bullard New Era, m.d.
100" Niles Heavy, m.d., p.r.t.
12' Niles, m.d., p.r.t.

RADIAL DRILLS

2½'-10" col American Triple Purpose Plain, m.d.
3'-13" col. Cincinnati-Bickford, Super-Service, m.d.
4'-11" col. Morris, m.d. on arm
4'-13" col. Cincinnati-Bickford Plain, m.d.
5'-13" col. American, m.d., 1940
8'-19" col. Cincinnati-Bickford Super-Service, m.d.

GEAR SHAPERS

No. 12 and 18 Fellows Gear Shaving Machines, m.d., late
No. 61A Fellows, m.d., latest type
No. 645A3 Fellows, m.d.
No. 72A Fellows, m.d.
No. 75A Fellows, m.d.
No. 715A Fellows High Speed Gear Shaper, m.d.

GEAR HOBBING MACHINES

No. 120H Gould & Eberhardt Double Head Universal, m.d.
Type A Barber-Colman, m.d.
#130 Cleveland Rigid Hobber

CRANKSHAFT GRINDERS

18x66" Landis Universal, type C, m.d., 1942
22"x72" Landis Type CH, m.d., 1942

PLAIN CYLINDRICAL GRINDERS

6x18" Cincinnati Model EA, m.d.
6x18" Landis Type C Hydraulic, m.d., late
10x18" Norton Type C, m.d., latest
10x36" Cincinnati Hydraulic, Model ER
16x72" Landis Plain, m.d.
16x120" Norton Type C, m.d., late
16" raised to 26"x72" type C Norton, m.d.
18x72" Norton Type C, m.d.

UNIVERSAL CYLINDRICAL GRINDERS

10x24" Landis Type C, m.d.
14x72" Cincinnati Model ER, m.d., latest type, Filmatic Spindle
12x48" Norton Universal, m.d., latest
18x66" Landis Universal Type C, m.d.

INTERNAL GRINDERS

No. 70A Heald, m.d., latest
No. 72A3 Heald Gagematic, m.d.
No. 72A5 Heald Sizematic, m.d.
No. 72A5 Heald Plain, m.d.
No. 73 Heald m.d., latest, new
No. 74 Heald, m.d.
No. 75A Heald, m.d., latest
No. 81 Heald Gagematic, Sizematic, m.d.
No. 81 Heald Plain & Sizematic, m.d.

ENGINE LATHES

12x84" centers Lodge & Shipley Geared Head, m.d., Inger
13"x60" bed South Bend, m.d.
14"x30" centers Bradford Lathe, Timken
14"x8' bed American, m.d.
16"x54" Lodge & Shipley, m.d., 1940

ENGINE LATHES (Continued)

16x54" Monarch, m.d.
16"x14' Monarch, m.d., taper
18x54" American, 1940
18"x72" bed Monarch, m.d., 1940
18"x14'6" bed Cincinnati, cone, motorized
18"x192" centers Monarch Model BB, m.d.
19"x16' bed LeBlond Geared Head, m.d.
20"x54" centers Reed Prentice Geared Head, m.d.
30"x40' bed (33' centers) Betts-Bridgeford Heavy Duty Hollow Spindle "Oil Country" type, m.d.
38"x84" centers American "Super-Productive", m.d.
36"16'6" bed Boye & Emmes Geared Head, m.d.
36"x18' Putnam, m.d.
38"x17' centers American Super-Productive Geared Head, m.d.
42" raised to 48½x108" centers LeBlond, m.d.

PLAIN MILLING MACHINES

No. 1B Milwaukee, m.d.
No. 2B Brown & Sharpe Plain, 1942
No. 3S Van Norman, m.d., 1942
No. 3G Van Norman Plain, 1942
No. 4 Cincinnati Plain High Power, late

TURRET LATHES AND SCREW MACHINES

No. 1A Warner & Swasey, m.d., 1940
No. 1L Gisholt, Universal, m.d., 1943
No. 2A Warner & Swasey, m.d., bar, 1944
No. 2L Gisholt Universal, m.d., latest type, 1945
No. 3 Jones & Lamson, 1¼" cap., full universal, m.d.
No. 3 Warner & Swasey, m.d., 1943
No. 3A Warner & Swasey, m.d., 1942
No. 4A Warner & Swasey Universal, m.d., shucking 1939
No. 4 Warner & Swasey, preselector head, m.d., 1942
No. 4L Gisholt Universal, m.d., 1943
No. 5 Gisholt Ram Type, preselector head, 1942

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- #1212A Excello Double End Boramatic—Late
- 72" Niles Bement Pond Vert. Boring Mill — older but good.
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- 3'9" Morris Mor - Speed Radial Drill.

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8-Sp 16" Type D Bullard Multaumatic
6" Niles, Floor Type 14x14' Plate
68"x21' C C Bridgeford Geared Head
#11 Blanchard, 16" Chuck 1942
#18 Blanchard, 36" Chuck 942
16"x72" Cincinnati Cylindrical 1942
20 MB Smalley-General Thread Mill '42
Tangent Bender Single Wing Struthers-Wells 1947
36"x8' Betts Geared Head 1942
2½" A Cleveland SS 1945
0-8 Cincinnati R&F Prod. Mill 1942
2-18 Cincinnati R&F Prod. Mill 1942

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BORING MILLS — Horizontal

HEALD No. 45 double end, double spindle; late
HEALD No. 46B single end Boremattic; late
HEALD No. 48A single end Boremattic; M.D., late
HEALD No. 49 Univ. Single End Boremattic; late
HEALD No. 49 double end, double spindle; late
NILES 8" bar; Floor Type, motor drive
UNIVERSAL "Tri-Way" 3" bar; M.D., late

BORING MILLS — Vertical

BULLARD 8", 8-spindle "D" Mult-au-matic; late
BULLARD 16", 6-spindle "D" Mult-au-matic; late
BULLARD 36", spiral drive; late type
NILES 53", 2-swivel heads, PRT; M.D.
NILES 100", 2-swivel heads; PRT; heavy Duty; M.D.
SELLERS 144", 2-swivel heads on cross rail; power rapid traverse, motor drive

BROACHES

CINCINNATI 1-30 Dupiex Vertical, late
COLONIAL VGI-10-48 Vertical, late
LaPOINTE 10-54" Vertical, Model SRV, new 1947
OILGEAR 3XA Horizontal, cap. 20,000 lbs.; 56" stroke, Hydraulic; late
OILGEAR XL-6 Horizontal; cap. 3-tons; 36" stroke; latest

DRILLS — Manufacturing

ALLEN No. 3, 4-spindle, No. 4 M.T.; late
BARNES No. 262, Heavy Duty Camel Back; late
BARNES H-2 Hydram; 2" cap.; 22" swing; No. 5 M.T.; hydraulic; M.D., late type
BARNES No. 201¼, 4-spindle; No. 4 M.T., 20" swing; M.D., late type
BARNES No. 420, 2-spindle Deep Hole Drilling and Boring; late type
NATCO Model B4B "Hole Steel", 60 adjustable slip spindles; late type
NATCO Model B3B "Hole Steel", 12 adjustable spindles; late type
NATCO Model E5 H.S. 10-spindle adjustable; late
LELAND-GIFFORD No. 2LMS, 2-spindle; M.D.; late
LELAND-GIFFORD No. 2LMS, 4-spindle; M.D.; late
LELAND-GIFFORD No. 1LMS, 4-spindle; M.D.; late

DRILLS — Radial

AMERICAN 5' arm 13" col. "Hole Wizard"; late
AMERICAN 4' arm 11" col. "Hole Wizard"; late
AMERICAN 5' arm 11" col. "Hole Wizard"; late type
CARLTON 5' arm 11" column; motor drive; late
CINCINNATI BICKFORD 6' arm 15" col., Univ.

GEAR CUTTING EQUIPMENT

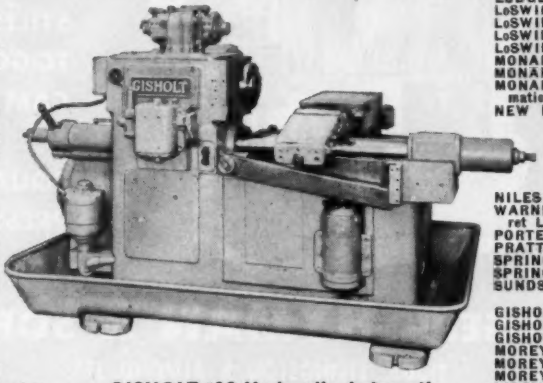
BARBER COLMAN No. 3 "Precision"; late type
BARBER COLMAN HRS Combination Sharpening Machine, M.D.; late type
BILGRAM 6" and 16" Bevel Generator; M.D.
BROWN & SHARPE 6-72 Auto. Gear Cutter; M.D.
BROWN & SHARPE No. 13 Automatic Gear Cutter
CINCINNATI No. 6-A (72"x20") Gear Cutter, M.D.
CINCINNATI No. 7-A (84"x24") Gear Cutter, M.D.
CROSS No. 1 Gear Tooth Rounder; M.D.
CROSS No. 35 Tooth Chamfering; late type
CROSS No. 40 Gear Tooth Rounder; M.D.
CROSS No. 45 Gear Tooth Rounder; M.D.
DETROIT Type GG 25 Gear Grinder; 18" cap.; late
GOULD & EBERHARDT 12H Gear Hobber; late type
GOULD & EBERHARDT 18H Gear Hobber; M.D.
GOULD & EBERHARDT No. 36BT Gear Hobber; late
GOULD & EBERHARDT No. 120H Double Head Universal; late type
GOULD & EBERHARDT No. 36BM; Hobber, M.D.
KOEPFER Model WM-11 Automatic Gear Hobber
MICHIGAN 862-24-A, Gear Finisher; 24" cap.; late
MICHIGAN Model 854 Gear Shaver, Rack Type, Capacity 8" dia.; 2" face; M.D.
PRATT & WHITNEY 10" Gear Grinder; late
ROBEY SMITH No. 1 Double Gear Planing
SHEFFIELD No. 201-A Contour Burring Machine; M.D.; late type

GEAR EQUIPMENT — FELLOWS

FELLOWS No. 6 High Speed Gear Shaper; late
FELLOWS No. 7 High Speed Gear Shaper; M.D.; late
FELLOWS No. 6IA High Speed Gear Shaper; late
FELLOWS No. 615A High Speed Gear Shaper; late
FELLOWS No. 6Z2 High Speed Gear Shaper; late
FELLOWS No. 7A High Speed Gear Shaper; late
FELLOWS No. 72 High Speed Gear Shaper; M.D.; late
FELLOWS No. 75 High Speed Gear Shaper; late
FELLOWS No. 48 High Speed Gear Shaper; Internal cap. 72" diameter; late
FELLOWS No. 13LS Lapper; motor drive, late

GEAR EQUIPMENT—GLEASON

GLEASON 3" Spiral Gear Generator; late type
GLEASON 11" Straight Bevel Gear Gen.; M.D.
GLEASON No. 6 Revacycle 5" cone distance; late
GLEASON No. 7 Hyp. Cutter Sharp; latest type
GLEASON No. 13 Hyp. Cutter Sharpener, cap. 6" to 12" dia.; late
GLEASON 12" Spiral Bev. Cutter Sharpener; M.D.
GLEASON 12" Straight Bevel Generator; late
GLEASON No. 14 Spiral Bevel Hypoid Gear Grinder; late type
GLEASON 15" Spiral Bevel Gear Generator; late
GLEASON No. 15 Quenching Press; late type
GLEASON No. 17 Spiral Bevel, Zerol and Hypoid Gear Grinder, M.D., late
GLEASON No. 18 Gear Tester and Lapper; M.D.
GLEASON No. 20 Spur Gear Tester and Lapper



GISHOLT #12 Hydraulic Automatic Lathe; chucker.

GLEASON No. 22 Hypoid Formate Gear Finisher; M.D., late type
GLEAON 24" Bevel Gear Planer; motor drive
GLEASON 25" Spiral Bevel Gear Gen.; M.D.
GLEASON 25" Straight Bevel Gear Gen.; M.D.
GLEAON 37" Bevel Gear Planer; M.D.

GRINDERS — Cylindrical, Plain and Universal

BROWN & SHARPE No. 3 Univ. 12"x40"; late
CINCINNATI 6"x18" Plain, "Filmatic"; Model ER
CINCINNATI 14"x72"; Universal; Model ER; late
LANDIS 4"x12" Type "H" Hydraulic Plain; late
LANDIS 10"x18" type "C" Plain; hydraulic; late
LANDIS 14"x36" type DC Plain hydr. with infeed; M.D., late type
LANDIS 14"x72" Plain type "C"; plunge type; late
NORTON 4"x12" Plain Type CTU; M.D.; late
NORTON 6"x18" Type "C" Plain Cyl.; late
NORTON 10"x48" Type "C" Hydr., Plain, Cyl.
NORTON 16"x72" Type "C" Plain; Hydr.; late
VAN NORMAN No. 666, 48" centers, crankshaft

GRINDERS — Internal

BRYANT No. 5 Internal; hydraulic; late
BRYANT No. 16-C-16 Internal; hydraulic; late
BRYANT No. 24-36" Internal; hydraulic; late
HEALD No. 70A Internal, M.D., late
HEALD No. 72A5 Plain Internal; late type
HEALD No. 72A5 "Gagematic" Internal; late
HEALD No. 78 Centerless; motor drive; late
HEALD No. 81 pl. chuck type Hydraulic; New 1947

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LAPPING MACHINES

LeBLOND No. 2 Rifle Barrel Lapper; late type
NORTON 10-U Vertical Lapper; late type
SCHRANER Model "A", 12"x35" centers Shaft Lapper; late type
ULTRA LAP No. 10 Precision Type Flat Surface Lapper; late

LATHES — Engine and Mfg.

AMERICAN 14"x54" c.c. "Pacemaker"; M.D.; late
DENHAM 16"x48" centers, Gap; late type
GISHOLT No. 12 Hydraulic Automatic; late type
HENDEY 16/24"x30" centers; Timken; late type
JONES & LAMSON "Fay" 20"x25" Auto., M.D.
LeBLOND Mod. 7ACL Crankshaft; 9"x30"; M.D.
LeBLOND 20"x48" centers; H.D. Timken; late type
LeBLOND 42" (actual swing 48½") x 108" centers, H.D. Geared Head; late type
LODGE & SHIPLEY 12"x30" G.H. Toolroom; late
LODGE & SHIPLEY 14"x30" Centers; late type
LODGE & SHIPLEY No. 5, 24" x 96" centers; late
LoSWING 4"x60" centers, late type
LoSWING 6"x60" centers; late type
LoSWING 4"x84" centers, late type
LoSWING 8"x108" centers, late type
MONARCH Model EE, 10"x20" centers; Timken
MONARCH 12"x30" centers; Model CKK; late
MONARCH 14"x42" centers; "Z" Magnamatic, Automatic; Timken, M.D., late
NEW HAVEN 42"x10' centers geared; motor drive
NILES 30"x25' bed, Single End Boring, "Time Saver"; late
NILES 30"x50' bed, Single End Boring, "Time Saver"; late
NILES 30"x108" c.c. Geared Head; Timken; late
NILES 42"x18' c.c. Heavy Duty Geared Head; late
WARNER & SWASEY No. 5 Universal Ram Type Turret Lathe; Preselector head; late type.
PORTER-McLEOD 16"x6' Lathe; New
PRATT & WHITNEY 16"x30" centers; Timken; late
SPRINGFIELD 14"x43" geared; M.D., late type
SPRINGFIELD 20"x48" G.H. Lathe; Timken
SUNDSTRAND 10"x60" centers, Automatic; late

LATHES, Turret

GISHOLT 1L Univ. Saddle type; Timken, M.D., late
GISHOLT 2L Univ. Saddle type; Timken, M.D., late
GISHOLT No. 3 Univ. Ram Type; Timken; late
MOREY No. 2 ram type, Timken; latest type
MOREY No. 3 ram type; Timken; latest
MOREY No. 4 ram type; Full Univ.; latest type
LIBBY 4H-12" hole, H.D. Turret Lathe; M.D.; late
POTTER & JOHNSTON No. 4D Auto. H.S., late
POTTER & JOHNSTON No. 6D Auto.; late type
POTTER & JOHNSTON No. 8DT Auto.; late type
WARNER & SWASEY No. 1A Univ. PRT; late type
WARNER & SWASEY No 2 Ram type; Timken; late
WARNER & SWASEY No. 3 Univ., Timken; late type
WARNER & SWASEY No. 5 Universal late type

MILLING MACHINES — Plain and Universal

BROWN & SHARPE No. 2 "Light Type", PRT, Timken, late type
CINCINNATI No. 3 dial type; Timken, M.D.; late
CINCINNATI 1-18 Production; Timken; late type
KEARNEY & TRECKER Model 4H; late type
VAN NORMAN No. 26 ram type; PRT; Timken
VAN NORMAN No. 22L Ram type, PRT; Timken; late type
VAN NORMAN No. 36 ram type; PRT; Timken; late

MILLING MACHINE — Thread

HALL Style B Planetary; late type
MOREY 12"x30" to 12"x190" centers; late type
LEES BRADNER No. LT 8"x36" and 6"x72" c.c.; late
LEES BRADNER No. HT 12"x24" and 12"x36" c.c.; late

MILLING MACHINES — Vertical

CINCINNATI O-8 Vertical, Timken; late type
CINCINNATI No. 3 Dial Type, High Speed, new 1953
CINCINNATI No. 4 Model ER Dial Type, Timken
KEARNEY & TRECKER No. 2H; late
PRATT & WHITNEY No. 12B Miller & Profiler Single Spindle, late type

PLANERS

DETRICK & HARVEY 48"x48"x16'; 4 hds.; hydr.
LIBERTY 144"x76"x48' adj. openside; box table; 4 hds.; vari-voltage; Power Rapid Traverse; M.D., late type' NEW 1940
NILES 48"x48"x10' Double, 4 heads, PRT; M.D.
NILES BEMENT POND 72"x72"x30'; 4 hds., Power Rapid Traverse; D.C.; M.D.

PRESSES

BESCO Model EB4, 40-ton cap. Back Flywhl; New
BIRDSBORO 325-ton, 31"x31" bet. uprights, hydr.
BLISS No. 419A, 525-ton double action toggle drawing press; M.D.
NATIONAL No. 5 "Maxi-Press" 1,000 ton cap., H.S. Forging Machine; M.D.
RODGERS 150-ton Shop Press; latest type
SHAW 250-ton hydraulic flanging press; late

SCREW MACHINES — Automatic

ACME GRIDLEY 1⅝", Model RB; 8-spindle; late
ACME GRIDLEY, 1⅝" Model R; 6-spindle; late
CLEVELAND 3¾" Model A Single spindle; late
CLEVELAND 6" Model "A" single spindle; late
CONOMATIC 1⅞", 8-spindle; late type
NEW BRITAIN GRIDLEY Model 065; 6-spindle chucker; late type

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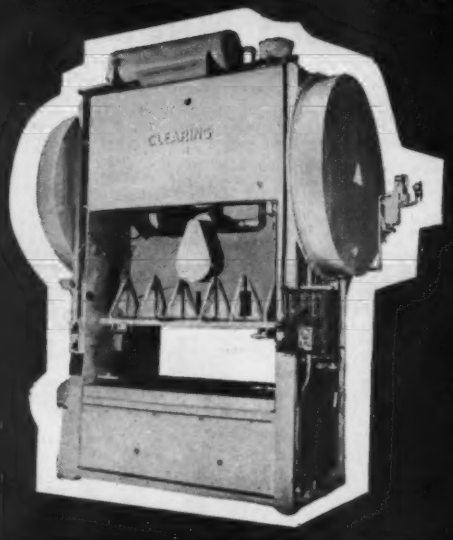

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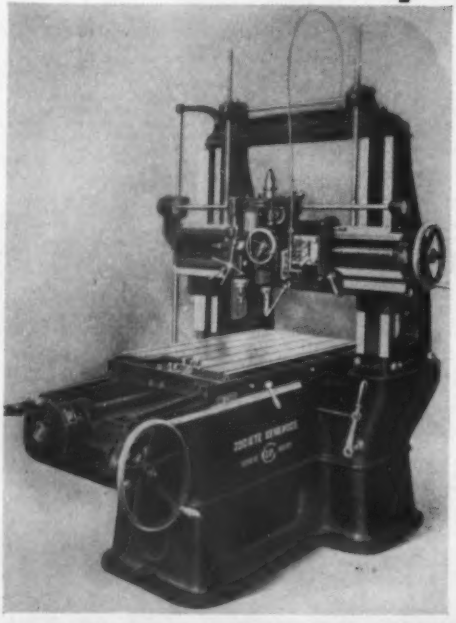

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Cincinnati Cutter and Tool Grinder #2 — 1942 — equipped with motor in base and controls, left and right hand foot stocks, work head, universal vise, universal tooth vest, guards and wheel dresser (two in stock).

Other machines in stock

20" Gould & Eberhardt Shaper
13"x30" Pratt & Whitney Geared Head Lathes
14"x6" Hendey Geared Head Lathes
#1 Brown & Sharpe Universal Cylindrical Grinder—1942
#2A & 2B Brown & Sharpe Double Overarm, motor in base
#3 Abrasive Surface Grinder 8"x24"

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12" Spindle Hole Libby Turret Lathe
Cleveland Lead Screw Tapper
3'9" Cin-Bick. Radials, motor on arm
32" American Shaper, V-ram
#3 & 14WD Hammond Carbide Grinder
#6-72 Brown & Sharpe Gear Cutter
#14PC 14" J & L Comparator
4-Ton Denison Multipresses
25-Ton Denison Hydr-Oil-Ic Press
#5 (50 Ton) L & J O.B.I. Press

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2 Acme-Gridley Automatic Screw Machines, 1⅝" Collet Capacity with Complete Tooling
Verson Punch Press No. 7½, 8" Stroke, 4" Adjustment, 105 Ton Capacity, new in 1945
Clearing Punch Press, 75 Ton Capacity, 17¾" Shut Height, 6" Stroke, new in 1953, never used.

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#1 MOORE JIG BORER

Fully equipped with Onsrud Jig Grinding Head, Rotary Table, 8" Sine Plate, Tool Cabinet. Can be inspected under power until Feb. 15, 1955. Price $6,800.00.

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Brown & Sharpe (1) Model #4
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Brown & Sharpe (8) Model 0G, ⅝" capacity.
Brown & Sharpe (4) Model 00G, ⅜" capacity.
Bechler (Swiss) ¾" capacity.
Ceco Screw Machine ⅜" capacity.
Cleveland Model AA-1. Model B.
Cleveland 1½", Conomatic 4 Sp. 1½" cap.
Gibbs, Automatic
New Britain 4 sp. Model 49.

BORING MILLS

Bullard 24" V.T.L. Spiral Drive
Bullard 8"—8 spindle, Multi-Matic
Cleveland 2½" Bar Cap., Defiance 3¼" Bar
Giddings & Lewis #32, 3" capacity
Kings 42", 72" Vertical 2 rail heads
Lucas, Mod. 41—3" Hoz. Boring Mill
Niles-Bement-Pond 4" 4½" Bar, 60" Vert.

BORING MACHINES

Heald Boremotic Model 46B
Heald Boremotic Model 49 & Mod. 48A
Simplex Stoker Units, double end
Excello Mod. 2112A Double Spindle
Excello—6 sp. Hyd. Inclined Type

DRILLS AND RADIALS

American 6'x15", American 6'x17", 3'9"
Baker No. 321 Vertical Boring & Drill
Barnes (1943) Multiple Sp.
Buffalo #2 Motor Spindle, #16—4 Sp.
Buffalo: Power No. 41, No. 42 RPMSTERS
Cincinnati Bickford 615" col. 3'9"
Cincinnati Bickford 24" Super Service.
Natco #12, 20 spindle. Model B2A—10 Sp.
Natco DS, 14 Spindles. Mod. E5 Hyd.
Leland-Gifford 2LMS & 3MS

ENGRAVERS

Gorton #ME, 3U, 1D, 3Z, Deckel G1L, G1, G2
Gorton Graduating Mod. #687-1
Gorton P13 3 Dimensional Like New
Gorton 3L, 3 Dim.
Preiss UE-3
Taylor-Hobson 3 dimensional Pantograph

GRINDERS, MISCELLANEOUS

Brown & Sharpe #2 Universal 14"x28", #3
Brown & Sharpe #5, 3"x18" Cylindrical
Brown & Sharpe #13 Universal Tool & Cutter
Bryant No. 5 Int. Chuck
Bryant No. 24-36 Internal
Cincinnati 6x18" Hyd. #4—Centerless—#2
Douglas Tool & Cutter 8"x15"
Gardner Disc Grinder 30"—15 H.P. Motor
Grenby, Mod. 1G-1 & 1G-2 Internal
Hanchett Mod. 228-BD Double Sp. Disc.
Heald 72A3 Int. Centerless Sizematic
Heald No. 30, Internal
J. & L. Thread; TG 615, Lempco 54" Swing
Landis Type C 6x18 Hyd.
Landis 6"x30" Type C Cyl., 10x24 Univ. 12x30
Norton #2 Tool & Cutter, No. 1 Tool & Cutter
Norton Type C 6"x18" Semiautomatic cyl.
Pratt & Whitney R6—Radius

GRINDERS, SURFACE

New 9x24" Hyd. Feed 10x8", 6x18
Abrasive 8x24", #33 Vert. & #34
Brown & Sharpe #5, #2 with Chuck
Gallmeyer & Livingston—Model No. 25—6"x18"
Heald No. 25—Hyd.
Heald 22—12" chuck, Arter 12", Covel #15
Norton 6x18 Hyd. #15 Covel Hand.
Portman 12" Chuck Rotary
Pratt & Whitney 12x36" Vertical
Thompson 6x18, Reid 2A, 6x18

GEAR EQUIPMENT

Barber Colman Type "A"
Barber Colman #18 Hob Grinder
Barber-Colman Mod. SHS, Sharpener
Barber-Colman #3, #2, #12 (3) also Type S
Cleveland Mod. 145 Rigid Hobber
Fellows High Speed Shapers 712, 725, 71, 7, 61A
Gear Grinder Mod. GG 32-B-16"
Gleason Gear Rougher
Gleason #2 Surface Hardener, No. 3 Gear Tester
Gleason #3 Spiral, #3 Straight Bevel
Mikron No. 79 Gear Hobbers
Michigan Univ. Hob & Cutter Relieving
Pratt & Whitney Mod. M-1257 Shaver.
Sykes 2A Generator

HACKSAWS & HEADERS

Marvel Mod. 6A Automatic—6"x6" Cap.
Marvel Mod. 9, Auto. Load. 10"x10" Cap.
Peerless 9"x9"—and 12"x12"
Rasmussen 10"x10"—4 Speeds.
Manville Header Mod. 188C—3/16 Cap.
Waterbury Farrell Header Mod. 514—3/16" Cap.
Waterbury Farrell No. 249 Header ¼" Cap.

LATHES

American 12"x30", Bridgeford 36"x20", 32"x16'
Cincinnati 22"x10' & 24"x11'
Gisholt Simplimatic 18"x16½", 2 Tables
Hendey 12"x42 and 12x30", 16x160"
Le Blond Regal 10"x3' bed, 12x42", 17" Late type
LeBlond 35/50x96" Gap, Late type
Lodge & Shipley 22"x30—24"x96"
Lipe Carbo 12"x18", 14"x36", 15"x30"
Lodge & Shipley #3A Duomatics
Monarch Magna-matic 14"x54"
Pratt & Whitney 16"x60, 10"x20", 16"x36
Putnam, Sliding Gap 22"/46"x92"
Reid 6WSL and 9WSL, Small Piece
Rivett Model 918 Precision. Mod 715
Sebastian 14"x6", So. Bend 13"x42", 14"x28"
Seneca Falls Lo-Swing 8"x106
Seneca Falls Lo-Swing 8"x104
Sound Bend 13"x5' O.C.G., 10"x3½ Taper Att.
Sundstrand Auto. Stub 18"x27"

MILLS, PLAIN, UNIV. PROD.

Brown & Sharpe #0 Omniversal, #000 Production
Brown & Sharpe #2B Plain, No. 2, 3A, 21, #2L
Cinn. 08 Rise & Fall, 2-24 Automatic
Cincinnati Hydromatic 56-96
Cinn. #3, 4 Plain, #18 Mfg. #5-48 Hydro.
Kent Owens IV, 1-8, 1-14, IM, 2-20
Milwaukee 2H Universal
Milwaukee #2B, Plain & Univ.
Sundstrand #00, 0, Rigidmils #3
US Multi-Millers Mod. MM-1
Van Norman #2L Univ.
Van Norman Mod. 1-18
Van Norman #12—Hor/vert—#36, 22

MILLS, VERTICAL

Brown & Sharpe No. 2
Bridgeport Model BH
Cincinnati (2)—1-18 Plain Automatic
Cincinnati No. 3 Hi-Power
Cincinnati No. 4 Hi-Power
Cincinnati #3, 08 Vertical
Cleveland No. 1
Gorton 8D Super Speed, 8½D, 9J
Maximiller No. 2
Milwaukee 4K & 2K
Morey #12M Profiler, 2 sp. #2 Maximiller
Reed Prentice Vert. Mill & Die Sinker Mod. 3VG

PRESSES

Bliss 650 Hi-Production Presses
Bliss 18, 19, 21, OBI, 53, 62, OB
Bliss #78½ 330 Ton SS, Bliss 74½
Bliss 5-48 Dbl. 32x48" Bed, Cushion
Hamilton 850 Ton S.S. Bed 27x48
Hamilton 110 FM Die Tryout Press
Henry & Wright 50 Ton Dieing
New 85, 60, 55, 30, 20, 15, 10, 5 Ton O.B.I.
Niagara Mod. 68B, S.S.
Niagara No. 13—Horning
Stokes Tablet Presses, Mod. R, RD3, RD3S, DDS
Thomas 56 Ton O.B.I.
Toledo S.S. No. 93D—33"x54" bolster
Toledo S.S. No. 93-C 33x47½ bolster
Toledo S.S. No. 93B. 33x36½ bolster
Walsh No. 3 O.B.I. 23 Ton, L1 #3
Z & H #4½, O.B.I. 20 Ton, 36-6 Back Gear

TURRET LATHES

Bardons & Oliver #2, 3, 7 Bar Feed
Gisholt 1L, 3L Chucking
Gisholt 2L, Cross Slid. Tur. & Hardinge DSM-59
Gisholt #5, Bar Feed, Plenty of Tools
Gisholt No. 4 Preselector
Jones & Lamson Mod. 8A, No. 5
Oster Mod. 601WD & 601DD
Potter & Johnson—Mod. 6DR & 6DREL
Warner & Swasey #1, 1A, 2, 2A, 3, 3A, 4, 5

MISCELLANEOUS

Band Saw: New Kalamazoo Johnson
Bending Roll: Reed-Power 5", 48"—8 ga.
Bolt & Pipe Threader: Landis, Oster-Williams
Broach: New 6-Ton Horizontal, 11 Ton Vertical
Hacksaw: Peerless 6"x6", Racine 6"x6", Marvel #9
Rolls—Reid Drop End Mod. 504—48"x8 ga.
Rolls—Lawn, Niagara—4'
Tishken 10 sp. Roll Former
Tishken—10 sp. Rolling Mill
Tappers—No. 1 Bakewell, Haskins 1-HA
Tappers—Warner & Swasey No. 10—1A
Tappers—Bodine Mod. 48—20

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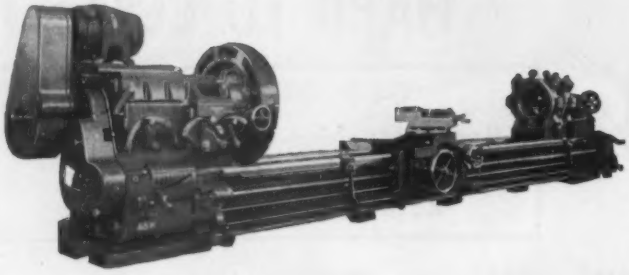
Machinery Company Inc.

EMERMAN OFFERS FROM STOCK

ENGINE LATHES FOR SALE OR RENT



20 x 102" centers Sidney Engine Lathe with Sidney fluid tracer and complete motor driven hydraulic unit. New 1952. Herringbone geared head, timken bearings 32 preselector spindle speeds from 15 to 1000 R.P.M., 2¾" hole in spindle action swing 22½", self lubricating, fan bed, motor in base. 15" 3 jaw chuck, 18" 4 jaw chucks. Dog plate. Motor driven coolarit pump. 20 HP AC motor. 3/60/220-440 V motor. Push button control. Serial number 9372.

ENGINE LATHES

Size	Manufacturer	Serial No.	Equipment	(Age) New
14"x30"	Hendey	33768	Timk. Bear., Chucks, Comp. Elecs.	1943
14"x54"	Hendey	30942	T.A., Timk. Bear., Chucks, Comp. Elecs.	1941
16"x30"	Hendey	31711	Timk. Bear., Chucks, Comp. Elecs.	1942
20"x68"	Springfield		Timk. Bear., Chucks, Comp. Elecs.	1938
20"x78"	Monarch		Timk. Bear., Chucks, Comp. Elecs.	1934
20"x68"	Prentice Geared Head		Timk. Bear., Chucks, Comp. Elecs.	1922
20"x48"	American Geared Head		T.A., Chucks, Comp. Elecs.	1921
(2) 20"x48"	Americans	61926,61987	Timk., Bear., Chucks, Comp. Elecs.	1940
20"x72"	Springfield	970	Timk. Bear., Chucks, Comp. Elecs.	1938
20"x96"	Lodge & Shipley	31066	T.A., Timk. Bear., Comp. Elecs.	1941
20"x91"	Axelson	945	Timk. Bear., Chuck, Comp. Elecs.	1940
22"x54"	Monarch		T.A. Timk. Bear., Chucks, Comp. Elecs.	1934
22"x48"	Monarch		T.A., Chucks, Comp. Elecs.	1942
22"x72"	LeBlond	NG6289	T.A., Timk. Bear., Comp. Elecs.	1942
24"x168"	Monarch	16668	Timk. Bear., Rapid Tra. Chucks, Comp. Elecs.	1942
(2) 24½"x336"	Monarch	6806	2—T.A., Timk. Bear., 2—Carriages, Rap. Tra. Comp. Elecs.	1940
26"x10'	Bridgeford			1917
27"x124"	Lodge & Shipley	32749	T.A., 4-way tool post, live center tailstock, Timk. Bear., Comp. Elecs.	1942
28"x282"	Betts Bridgeford	E-5218-6	2—Carriages, 2—Taper Att. Rap. Tra., Comp. Elecs.	1941
36"x18'	Bridgeford, Geared Head		T.A., Comp. Elecs.	1921
36"x18'	Lodge & Shipley			1922
36"x18'	LeBlond, Geared Head			1922

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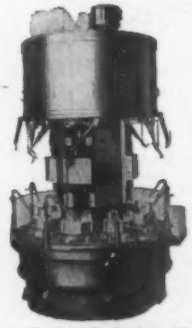

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ALL TYPE D BULLARD MULT-AU-MATICS

5—12" 8-spdl. Bullard Mult-au-Matics S/N 22157; S/N 15133; S/N 16880; S/N 16877 & S/N 16879.

3—8" 8-spdl. Bullard Mult-au-Matics S/N 15170; S/N 14966 & S/N 15129

MACHINES COMPLETE WITH MOTORS & CONTROLS

Also have large assortment of extra slide tools, new gears & 10" and 14" chucks. All for Type D Bullards.

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V-8 CRANKSHAFT MACHINERY

2—Wickes Model MF-4 Heavy Duty Automatic Single Spindle Multiple Crankpin Turning Lathe S/N 7100-1-2. 1947 Machines complete with Motors and Controls.

3—C.F.B.-4-F Milling Pin Bearing Lathes S/N 346, 347 and 388. 1944 Machines Complete With Motors and Controls.

2—Snyder 6 Station Single End Hydraulic Re-centering Machine S/N 19347. 1946 Machines complete with Motors and Controls.

2—#2L.B LeBlond Double Center-Drive Automatic Crankshaft Lathes S/N 2 L.B-30-34. 1947 Machines Complete with Motors and Controls.

1—V-8 Landis Crankshaft Pin Grinder 16x32", single wheel, S/N 16411; 3 motors & controls.

MISCELLANEOUS

2—#10-HO Baker Drill Presses S/N 11601-11603 #4 M.T.

1—#36-HO Baker Drill Press with 10-station rotary Hydraulic indexing table

2—15" Sundstrand Stub Lathe with front and rear slides S/N N-151 & 152

1—2-spdl. Besley Vertical Grinder 36" cap. 16" dia. grinding wheels with automatic sizing and hydraulic operated index table

1—GM Vertical crankshaft Balancing Machine

1—#12 Martin marking machine

1—General Flex Straightening Press—18 ton

1—Oil Gear Vertical C-frame hydraulic Press—15 ton

1—4T Fellows Thread Generator S/N 11012

NUT TAPPERS

4—⅝" National Bent Shank Nut Tappers—Rebuilt

2—⅞" National Bent Shank Nut Tappers—Rebuilt

GRINDERS

No. 2 Oliver Arc Face Grinder, cap. 6" to 26", S/N 2C-507 (1948) Machine equal to new.

1—2-spindle Besley Vertical 36" grinder S/N 202B automatic sizing, Hydraulic Index Table

No. 2 Cinn. Tool & Cutter Grinder S/N ID2TIP-43 (1946) Machine equal to new. Has complete tooling.

CHUCKERS

2—Baird Mod. B Chuckers, 6 spdl. 7" cap. rear slide

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MONA MEMBER

"LOOK THESE OVER"

100" BETTS Vertical Boring & Turning Mill, two heads on rail, M.D., 1930.

No. 1½Bx81" PRATT & WHITNEY Duplex Deep Hole Drilling Machine, M.D., 1942.

No. 420 BARNES Two-Spindle Deep Hole Drilling Machine, M.D., 1942.

No. ½Bx50 PRATT & WHITNEY Two-Spindle Reaming Machine, M.D. 1944.

3' arm 11" column CARLTON Radial Drill, motor-on-arm drive, 1942.

Model GCP-24 RED RING Heavy Duty Ultra-Precision Gear Shaver, 1952, machine like new.

10"x72" LANDIS Type "C" Plain Hydraulic Cylindrical Grinder, 1942.

12"x30" centers MONARCH Model C Toolroom Lathe, M.D., 1942.

22"x48" centers MONARCH Model CM Heavy Duty Geared Head Lathe, M.D. 1943.

22"x336" centers MONARCH Model CM Heavy Duty Geared Head Lathe, M.D., equipped with two carriages, each with taper attachment for long taper turning, actual swing over bedways 27½", 1940.

24"x144" centers BOYE & EMMES Geared Head Engine Lathe, T.A., M.D., 1941.

38"x17' centers AMERICAN "Super Productive" Geared Head Lathe, M.D., 1941.

60"x18' bed (81" centers) LeBLOND Heavy Duty Geared Head Lathe, new 1952—never used.

No. 2 CINCINNATI High Speed Dial Type Plain Millers (2), 1942.

24"x60" FITCHBURG Heavy Duty Bed Type Milling Machine, table 24"x72", 1953, M.D.

Nos. 3 & 4 WARNER & SWASEY Ram Type Universal Turret Lathe, bar feed, M.D., 1941.

Nos. 7A & 8A JONES & LAMSON Saddle Type Universal Turret Lathe, M.D., 1940.

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Unusual opportunity to procure modern Fellows Gear Shapers 615A and 645 as well as 12" Gleason Generators, 36 BM Gould & Eberhardt Rougher, #7 Fellows Gear Shaper, #16 D. E. Whiton Machine. Write for full information.

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Cincinnati 34-36 Hydromatic Duplex Tracer controls both spindles, Excellent. 5'11" Col. Carlton Radial Drill Press M.D. 1943 #46 B 49 Heald D.E. Borematics.

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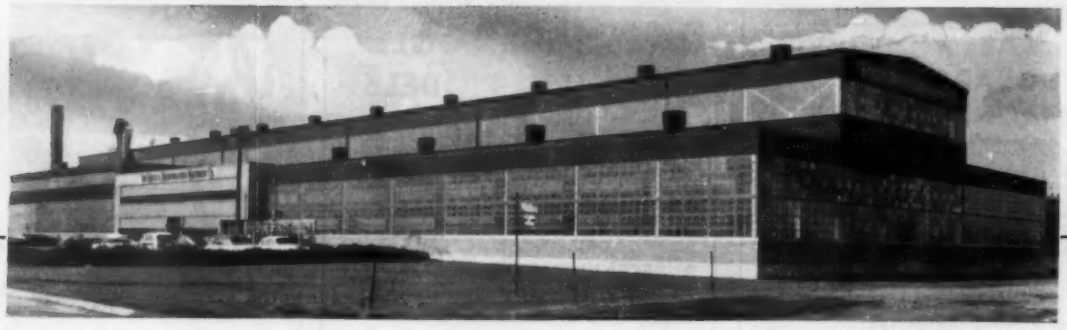

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VERTICAL BORING MILLS
24" BULLARD Vertical Turret Lathe
24" BULLARD High Column VTL
42" BULLARD Vertical Turret Lathe

DRILLS
#314A BAKER Univ. Heavy Duty Drill
#30 NATCO Multiple Spindle Drill
#3 MA-6 AVEY Drill

GEAR CUTTERS & HOBBERS
#135 CLEVELAND AXLE Shaft Hobber
#36BM GOULD & EBERHARDT Bevel Gear Cutter
#725 FELLOWS Gear Shaper
#61A FELLOWS Gear Shaper

GRINDERS (Cylindrical)
#3 BROWN & SHARPE Universal Grinder
6x18 NORTON Cylindrical Grinder
6x18 CINCINNATI Plain Cyl. Grinder
10x18 NORTON Plain Cyl. Grinder
10x48 LANDIS Plain Cyl. Grinder
14x72 CINCINNATI Plain Grinder
10x24 LANDIS UNIVERSAL Grinder

GRINDERS (Internal)
#50 HEALD Internal Grinder
#16-16 BRYANT Internal Grinder
#16-28 BRYANT Internal Grinder
#16-38 BRYANT Internal Grinder
#24-26 BRYANT Internal Grinder

GRINDERS (Surface)
ARTER Mod. A3-16 Rotary Surface Grinder
ARTER Mod. B-30 Rotary Surface Grinder
#16A2 BLANCHARD Auto. Surf. Grinder
#25A HEALD Rotary Surface Grinder

• If you are looking for a used machine that can be put into production immediately — one that can be depended on to produce as represented—it will pay you to select a machine from our stock.

If you prefer a completely rebuilt machine — one that will give a maximum of accuracy — and again one that is truly as represented—we believe we can serve you.

An inspection of our facilities will definitely convince you that we are both experienced and thorough in our rebuilding procedure.

GRINDERS (Miscellaneous)
ROGERS Model 76 Knife Grinder
#2 CINCINNATI Centerless Filmatic
#2 CINCINNATI Centerless Plain
#179 GARDNER Disc Grinder

LATHES
14x6 HENDEY LATHE (2)
16x30 HENDEY Lathe
16x78 AMERICAN Lathe
18x44 Centers LODGE & SHIPLEY
20x48 AMERICAN Lathe
20x60 AMERICAN Lathe

MILLERS
#2 BROWN & SHARPE Pl. Horiz. Mill
#2K KEARNEY & TRECKER Pl. Horiz. Mill
#4F KEARNEY & TRECKER Pl. Horiz. Mill
#1403 KEARNEY & TRECKER Mfg. Mill
#1407 KEARNEY & TRECKER Simplex Mill
#4-48 CINCINNATI Duplex Mill

TURRET LATHES
#1 CINCINNATI ACME Turret Lathe
#1A WARNER & SWASEY Turret Lathe
#2A WARNER & SWASEY Turret Lathe (2)
#2L GISHOLT Turret Lathe (2)
#3A WARNER & SWASEY Turret Lathe (2)
#4A WARNER & SWASEY Turret Lathe (2)

MISCELLANEOUS
14"x16 COULTER Automatic Lathe
12" 8-Sp. BULLARD Mult-Au-Matic
6x60 PRATT & WHITNEY Th. Miller
Type "S" PRODUCTION Belt Surfacer
#22 MURCHEY Threader
36x36x26 CINCINNATI Hypro Planer
6" RHODES Shaper

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LATE MODEL GUARANTEED MACHINE TOOLS

BORING MACHINERY

No. 2 P. & W. Jig Borer, Model M1278
Model 6I Excello 6-spindle cyl. borer, 1946
42" Bullard New Era vertical T/L
3¼" Bar No. 32 Lucas, horizontal, table type
36" Rogers vert. T/L side head, new 1942
36" Bullard vert. T/L, side head, #11325
72" Niles Bement Pond 2 heads, PRT, #17623

DRILLS, RADIAL

3½ ft. arm 8" column American sensitive
4' arm 13" col. Carlton M.O.B.
9 ft. arm 16" column American, late type.

GEAR MACHINERY

8" Red Ring gear finisher, 1942
No. 7125 Fellows gear shaper, 1942
Type A Barber Coleman universal
No. 3 Barber Coleman std (3)
No. 12 Barber Coleman (3)
No. 12H Gould & Eberhardt universal
No. 36H Gould & Eberhardt universal

GRINDERS, CYLINDRICAL

4"x18" Cincinnati pl. hyd., plunge cut, 1946
10"x18" Norton types BA, A C, late models
10"x18" Cincinnati filmatic, type ER (2), 1941-1946
16"x36" Norton type C hydraulic (2), 1943
14"x36" Landis type C, hydraulic (2), 1946
16"x36" Norton type C, hydraulic (2), 1943
16"/26"x72" Norton type C, hydraulic, 1945
16"/40"x120" Landis gap type, hydraulic, serial 16109
16"/48"x96" Landis gap type hydraulic, new 1941
No. 13 Brown & Sharpe universal tool, new 1942

GRINDERS, SURFACE

16A2 Blanchard rotary surface, serial 6046, 1946
6"x18" Norton vert. spdl. hydraulic, 1942
8"x22" No. 3 Abrasive, motor in base
12"x48" Model 300 Hanchett vert. spdl. 1946
14"x36" Pratt & Whitney vertical surface grinder, 1942.
72" No. 72 Hanchett rotary surface, 1946

INTERNAL GRINDERS

Nos. 72, 72A3 and 72A5 Heald
No. 5 Bryant semi-automatic chucking
No. 2 Cincinnati centerless (3), 1942-1943

LATHES, ENGINE

14"x42" Hendey G.H., M.I.B., 1949
24"x14 ft. bed American G.H., Q.C.G., serial 44070
24"x20' bed LeBlond heavy duty, DC motor, older
54"x30' bed Pond, DC motors, older but excellent

LATHES, MFG. & MISC. & TURRET

17"x72" LeBlond Rapid production (5), 1946-1947
No. H5 Libby International saddle type universal turret lathe, 1940
No. 5 Jones & Lamson Universal ram type turret lathes, (2) late models

MILLING MACHINES

No. 2 Brown & Sharpe vertical
No. 2 Cincinnati HI-Power plain horizontal
No. 4 Cincinnati HI-power plain horizontal
No. 5 Cincinnati HI-power plain horiz., vert. attach.
No. 2-18 Cincinnati production mill, late
No. 4-36 and 4-48 Cincinnati Hydromatic production
No. 3B and 4K Kearney & Trecker plain, late type
No. 22L Van Norman pl. horiz., 1942.
54" Ingersoll 3 spdl rotary, 1940.
24"x24"x12 ft. Ingersoll adj. rail planer type mill, tracer controlled, 1945
42"x42"x18 ft. Ingersoll adj. rail double housing mill, 2 S.H. and 1 R.H. power on rail and head
42" Ingersoll 3 spindle rotary continuous mill
43"x20"x20 ft. Ingersol fixed rail double faced planer type mill
60"x48"x16 ft. Ingersoll adj. rail double housing planer type mill, 2 S.H. and 2 R.H.
72" swing 64" table Ingersoll 2 spindle rotary continuous mill, timken bearings.

PRESSES

150 Ton No. 13-1 Cleveland O.B.I.
500 Ton Baldwin Southwark Hyspeed Hydraulic 1939
1000 Ton No. 666 Toledo Forging
185 Ton No. 7½ Verson O.B.I. (2)
200 Ton No. 23 Bliss embossing
300 ton No. 1039 Hamilton S.A., D.C.
400 ton No. 600 Toledo knuckle joint
126 Ton No. 93½D Toledo D.C., S.S.
106 Ton No. 93C Toledo SS. DC. air cushion
2 to 70 ton Ferracute punching (several)
3 to 60 ton O.B.I., most every make

SHAPERS & SLOTTERS

24" Gould & Eberhardt ind. universal shaper
32" Gould & Eberhardt Invincible, F.M.D.
36" Rockford vert. hyd. slotter, 1942

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MACHINE TOOLS 1941-1955 MODELS GUARANTEED

CUTTER & TOOL GRINDERS

FELLOWS: Flat Top Helical Gear Cutter
OLIVER: 10" Template Tool Bit Grinder

DRILLING MACHINES

ALLEN: No. 2 Drill—6 spindle, 8"
ALLEN: #2½ High Speed 15" #3 MT
BARNES: No. 210 2-spindle, 21" swing
PRATT WHITNEY: ⅛Bx50" Deep Hole
RADIAL DRILLS: Archdale, 5', 6' & 7', new

GEAR & SPLINE MACHINERY

FELLOWS: #6I Shaper—35" dia.
FELLOWS: 6IA & 64A Shapers, 18" dia.
GLEASON: #12 Rough & Finish Generator
SYKES: Rack Cutting Machine 12" to 36"
FELLOWS: Gear Lappers, 8LSI and 13LSI
GLEASON: Testers, #3, #4 and #6.
NAT. BROACH: SIC-12" Rod Ring Tester
CLEVELAND: #130 & 140 Rigidhobbers
GEAR GRIND. MACH: GG-19 10"x24" Hydraulic
GLEASON: #17 Gear Grinder, 23½" P.D.
PRATT & WHITNEY: 10" Gear Grinders, 1 & 2 wheel
INTERNAL GEAR GRINDER: GG-31

GRINDERS—CYLINDRICAL

BROWN & SHARPE: #10 6"x18" plain
CINCINNATI: 6"x18" plain hydraulic
LANDIS: 16"x32" Type "D" Crankpin
NORTON: 12"x18" TYPE C Universal
NORTON: 18"x36" 30° Angle Wheel
NORTON: 10"x18" 45° Angle Wheel

GRINDERS—INTERNAL

BRYANT: #5, 16-16, 16CP16, 16-28, 24L36
HEALD: #50 Planetary
HEALD: #72A3 Plain & Sizematic
HEALD: #72A5 65" Extended Bridge
HEALD: #72A5 Plain

GRINDERS—RADIUS

VAN NORMAN: #73 capacity 7½"
VAN NORMAN: #649-16, cap. 6" to 16" dia.
VAN NORMAN: #3½, Universal

HONING & LAPPING MACHINES

BARNES: Model 172, 2" dia. x 6" stroke
MICROMATIC: H-510 double end horiz., 2" dia.
MICROMATIC: H-2 single end 2 spindle, 1" dia.
FELLOWS: 8LSI & 13LSI Gear Lappers

LATHES—PRODUCTION

BLOUNT: Speed Lathe 12"x48"
LODGE & SHIPLEY: #3A Duomatic 25½"x27"
POTTER & JOHNSTON: #4D Auto Turret

LATHES—TURRET

BULLARD: 36" Vertical Turret
WARNER & SWASEY: #1A, #2A, #3, #3A, #4, #4A and #5
HERBERT: #0, #2, #4, #7, #8 and 9B30, new
WEBSTER & BENNETT: Vertical 36" & 48"
JONES & LAMSON: #8A bar feed

MILLING MACHINES

TAYLOR-FENN: M-80 Duplex Spline
RICE—BARTON: 4" Twin Spline
VAN NORMAN: 10CT Contour Miller

SAWS & CUT-OFF MACHINES

RUSSELL: 9½" Cut-Off Saw with Auto. Feed
RUSSELL: 5½" Cut-Off Saw with Auto. Feed
MOTCH & MERRYWEATHER: #3 Saw
MARVEL: #6A Hacksaw, 6"x6". Auto. Feed

THREAD MILLERS & TAPPERS

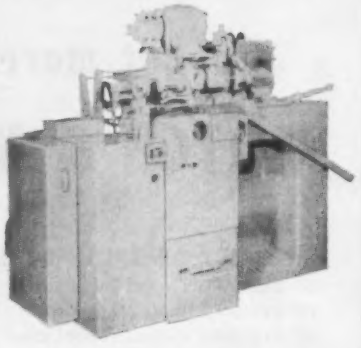
HALL PLANETARY: Mod "D" Thread Miller
LANDIS: 2½" Single head horiz. Threading
LEES BRADNER: #40A Thread Miller
LEES BRADNER: CT-36 Thread Miller
MURCHEY: #22 Horizontal threading and tapping machine, ½" to 2½" dia. cap.
PRATT & WHITNEY: 4½x12" Thread Miller

MISCELLANEOUS

GARDNER: #84A Double Disc Grinder, 23" wheel
MOLDING MACHINES ROLLER JOLT: Osborne 2047-3
AUTOMATIC SCREW MACHINE: Wickman, Single Spindle, 7/16", new
TEST STAND: Denison 913-AM Hydraulic
HARDNESS TESTER: Cogan Brinell 16-8
SHEFFIELD PRECISIONNAIRE GAUGE
SUNSTRAND: Double End #53 42" & 60" Centering Machines

TRIPLEX MACHINE TOOL CORP.
75A WEST ST. NEW YORK 6, N. Y.
ESTABLISHED 1919

Less than 50% of new cost!



Two No. 2209-D BRYANT Internal Grinders, latest type

Total chuck swing	9"
Max. traverse stroke	6"
Max. grinding stroke	¾"
RPM of work spindle	2400 rpm
RPM of wheel head:	
ser. #9493	20,000 to 36,000 rpm
ser. #9643	36,000 to 50,000 rpm
All motors	220/440/60/3/AC
Net weight each, appr	4200 lbs

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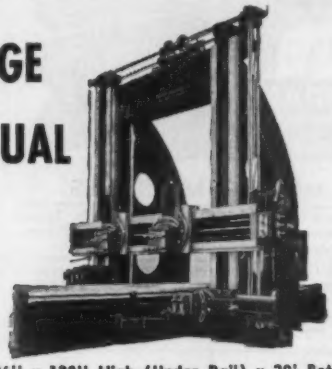

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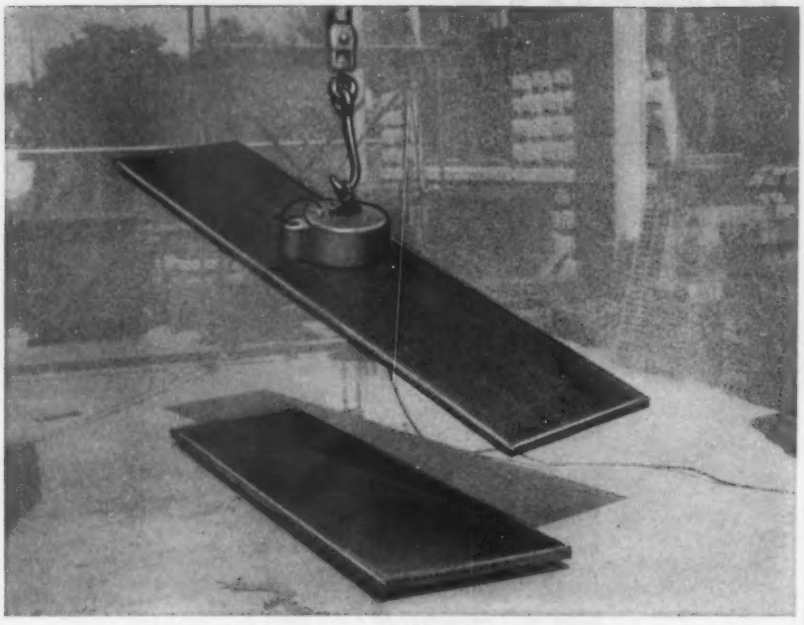

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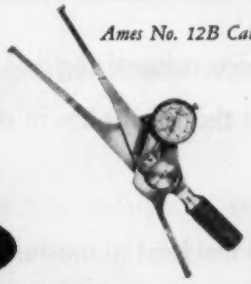

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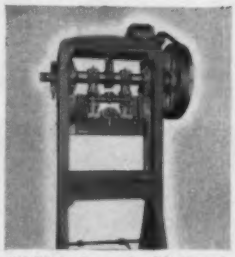
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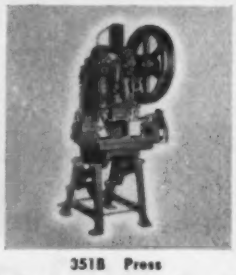
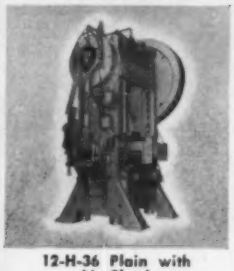
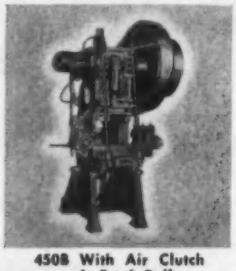

351B Press


12-H-36 Plain with Air Clutch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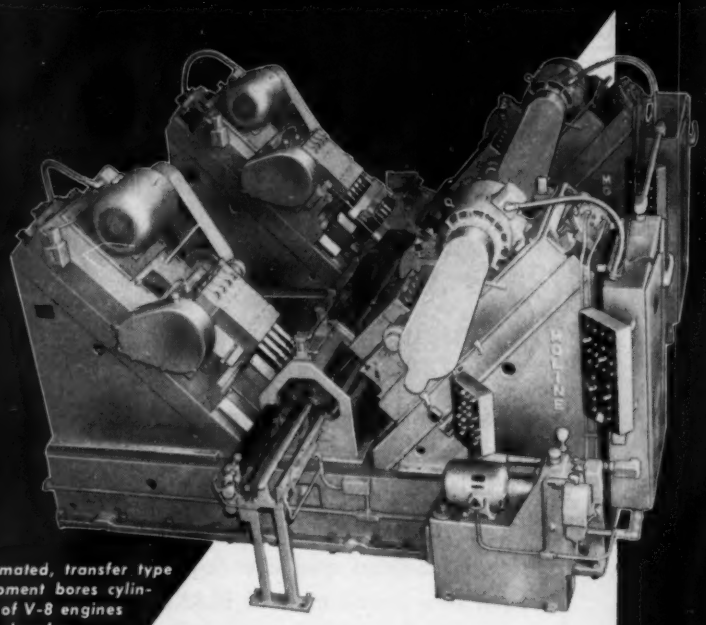

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From the *American Machinist* Library of *Tips for Top Shop Men*

BE MAN enough to stand up and fight for what you say and believe—or don't say it. If you're afraid of the boss, making remarks behind his back won't give you confidence.

the Key to Cost Control for taps!

● Buy *any* good taps you want, BUT — keep them the way you want them . . . sharp, accurate, and efficient . . . with the BLAKE system.

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IF you have worked with your hands, your normal tendency in a crisis will be to work with your hands again. There are times when this will impress the men who work for you, do much to knock down any idea that you're an incompetent stuffed shirt. But never forget that you're paid now for working with your head, and that headwork demands more perspective than handwork is likely to give you. Also remember the thrill you got out of achievement and give the next generation the same chance to grow.

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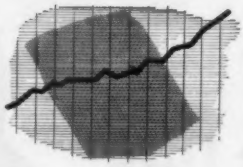

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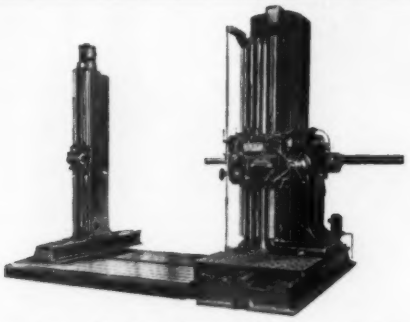
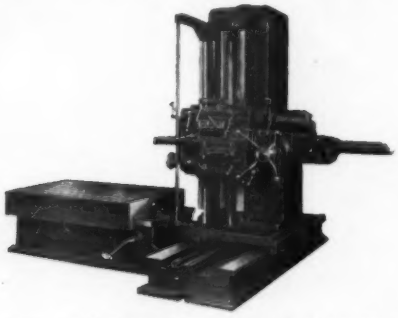
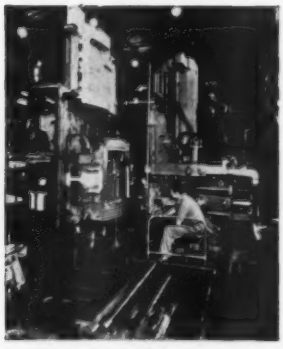


Floor type with bed plate and boring bar support. Used in shops where workpieces are large, weighing as much as 20 tons. Stationary or adjustable tables can be attached to the bed plate.



Floor type with large table, adjustable either by hand or power. The Gilbert machine can be rail mounted to increase operating range and flexibility.



Large Gilbert floor type horizontal boring mill equipped with a duplicating attachment for spindle. 3¾" spindle, 96" vertical travel of spindle head, 120" horizontal travel of column on runway.

Specification summary	floor type
Spindle diameter	*3½" or 3¾"*
Continuous feed to spindle	*30"*
Vertical travel of spindle head	*36"-96"*
Horizontal travel of column	*48"-"168"*
Drive motor, hp	*7½ or 10HP*

sell machine time for less per hour

You can sell your machine time for much less per hour if your machine is a Cincinnati Gilbert boring mill.

Take the floor type Gilbert, for example. Combine the basic machine with one of Gilbert's many workholding units, and you can do as many operations as you can do on equipment costing many times more. With the revolving-column Gilbert, you can even mill cavities with straight sides or reverse curves without resetting work. If you wish, the Gilbert mill can be adapted to workholding equipment or runways already in your shop.

Ask for a proposal; you'll see that it pays to replace with a Gilbert. New literature will be sent at your request.

A 48" x 120" auxiliary table, with outboard supports, added to a Gilbert floor type machine equipped with an adjustable table. This combination reduces set-up time in operations on pieces of unusual size or shape.

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America's pioneer producer of 52100 tubing, the Timken Company is the *only* company that makes 52100 steel in tubing, bars and wire. We have a background of experience that can't be equalled. In terms of benefits to you, it's an experience that assures uniform quality from tube to tube and from heat to heat.

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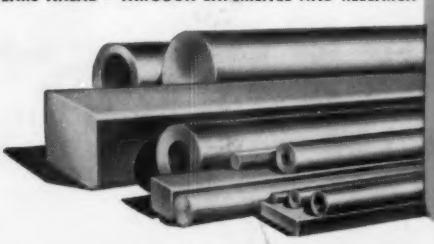

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